The Economic Effects of Significant U.S. Import Restraints: First Biannual Update
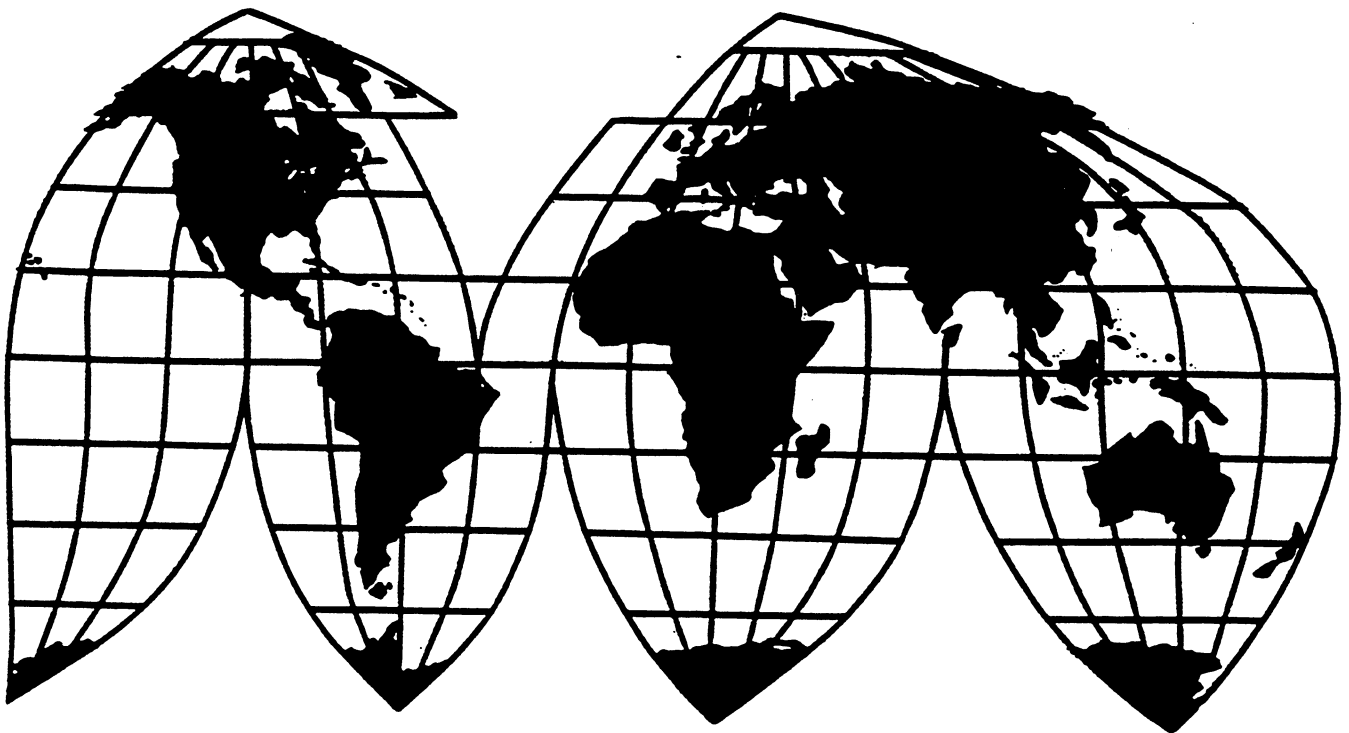
Investigation No. 332-325

U.S. International Trade Commission

Washington, DC 20436

U.S. International Trade Commission

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PREFACE

On June 5, 1992, the United States International Trade Commission (USITC) instituted investigation No. 332-325, The Economic Effects of Significant U.S. Import Restraints. The investigation, conducted under section 332(g) of the Tariff Act of 1930, is in response to a request from the United States Trade Representative (USTR) (see appendix A). A report was delivered to the USTR in November 1993. The USTR also requested that the report be updated by the Commission at intervals of approximately 2 years. This study is the first biannual update of the report delivered in November 1993.

The purpose of this investigation is to assess the impact of significant U.S. import restraints on U.S. firms, workers, and consumers and on the net economic welfare of the United States. In particular, the USTR requested an economywide assessment of the effects of simultaneously liberalizing all of the sectors covered by significant import restraints. The USTR also requested an assessment of liberalizing each of the covered sectors individually.

The USITC solicited public comment for this investigation by publishing a notice in the *Federal Register* of January 11, 1995 (60 F.R. 2784). Appendix B contains a copy of the notice and a list of the submissions that were received.

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EXECUTIVE SUMMARY

Background

This report is an update of an earlier USITC report on the economic effects of significant U.S. import restraints on the U.S. economy, prepared at the request of the United States Trade Representative as a direct successor to a similar report prepared in 1993.[1] Like its predecessor, this report addresses the economic effects of a liberalization of significant U.S. import restraints in manufacturing, agriculture, and services.

The base year for the study is 1993, since this is the year for which the most recent data are available on the structure of the U.S. economy. Therefore, the primary analysis in this report is an analysis of the effects of liberalizing trade barriers as they existed in 1993, given the economy as it was structured in that year. In addition, this report examines the features of the Uruguay Round Agreements (URA) of the General Agreement on Tariffs and Trade (GATT) that take effect in 1995 and discusses the likely implications of those agreements, as if applied to the U.S. economy as it existed in 1993.

The USITC's Computable General Equilibrium (CGE) Model of the United States is the principal tool used in the Commission's quantitative analysis.[2] The USITC CGE model allows analysis to extend beyond the specific sectors subject to import restraints. It models the likely effects on other sectors that are suppliers to or customers of the directly affected sectors, and on government revenues and returns to capital and labor. The USITC CGE model explicitly accounts for upstream and downstream production linkages and intersectoral competition for labor and capital. The model also provides measures of the effect of removing the import restraints on the economy as a whole, through estimates of the change in economic welfare.

The import restraints examined in this study are tariffs and quantitative restrictions such as quotas, voluntary restraint agreements (VRAs), and voluntary export restraints (VERs). For the purposes of this study, tariffs are specified as the average Most Favored Nation (MFN) ad valorem tariff calculated on a c.i.f. basis for 1993.[3] The effects of quotas are examined by translating them into their tariff equivalents, generally using the price-gap method. Economic theory suggests that the restrictions imposed by import quotas raise the domestic price above the world price for a commodity. Hence, the price gap between the domestic price and the world price (inclusive of transportation costs to deliver the product to the U.S. border, and adjusted for other market and quality differences) can be used to

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[1] See USITC, *The Economic Effects of Significant U.S. Import Restraints*, USITC publication 2699, Nov. 1993.
    A series of earlier studies, prepared at the request of the Committee on Finance of the U.S. Senate, was presented in three parts: USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase I: Manufacturing*, USITC publication 2222, Oct. 1989, USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase II: Agricultural Products and Natural Resources*, USITC publication 2314, Sept. 1990, and USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase III: Services*, USITC publication 2422, Sept. 1991.
    [2] For views of individual Commissioners, see "Commissioner Comments" after chapter 7. For the views of Commissioner Bragg on economic modeling, see, *The Economic Effect of Antidumping and Countervailing Duty Orders and Suspension Agreements*, USITC publication 2900, June 1995, at XIII.
    [3] Average ad valorem tariff rates on a dutiable value basis are calculated by dividing the estimated duties collected by the U.S. Treasury for a sector by the value of imports in that sector that are subject to duties. Consequently, the tariff rate used in this report embodies both ad valorem and specific tariff rates specified in the Harmonized Tariff Schedule.

represent the premium associated with a particular quota.[4] The tariff equivalent is actually the percent above the world price that the price gap represents.

In 1993, several domestic quantitative restrictions were in place. These included the Multifiber Arrangement (MFA); VERs on automobiles and machine tools which expired in 1993; the meat VRA; the agricultural quotas on cotton, dairy products, peanuts, and sugar; and the ban on the importation of cabotage maritime services.[5] Tariffs were in place for all these sectors except cabotage maritime services, but among them only the tariffs on motor vehicles, which includes autos, and certain textile and apparel products were considered significant by the criteria described below.

For sectors protected by tariffs, USITC staff developed a standard to determine a "significant" tariff level. Two criteria were applied to commodities defined, in general, at a level equivalent to the 4-digit level of the Standard Industrial Classification (SIC): 1) a 1993 MFN ad valorem tariff rate of 7.5 percent or higher and $100 million or more in trade, calculated on a cost, insurance, and freight (CIF) basis or 2) sectors with over $350 million in tariff revenues collected in 1993. The objective was to identify a comprehensive list of imports that includes all those for which imposition of tariffs might be expected to alter patterns of trade, either because a high tariff significantly affects the price, or because a high volume of trade is subject to the tariff. These criteria qualify 13 sectors for study: frozen fruits, fruit juices, and vegetables; industrial chemicals; rubber and plastic footwear; nonrubber footwear; leather gloves and mittens; personal leather goods; ceramic wall and floor tile; china tableware; blast furnace and steel mill products; ball and roller bearings; household audio and video equipment; motor vehicles; and costume jewelry and costume novelties.

Two general equilibrium analyses were performed for the sectors subject to significant import restraints.[6] After tariff equivalents were estimated for nontariff barriers, the first simulation, reported in chapter 2, estimated the effects of simultaneously removing tariffs and the tariff equivalents of the nontariff barriers for all covered sectors. This provided an estimate of the economy-wide effects of all import restraints. Then the effects of eliminating the barriers for each sector individually were estimated, as reported in chapters 3 through 6. Each simulation yielded estimates of net welfare changes for the economy as a whole due to liberalization of the specific sector, as well as estimated effects on trade, output, and employment for the sector (or sectors) being liberalized and for the rest of the economy. This summary will present the most important results of these analyses, beginning with the effects of trade liberalization on the whole economy. These include the economy-wide effects of liberalizing all restraints simultaneously, and of liberalizing individual sectors. Then more specific effects, on sector output, employment, and trade, of sectoral liberalization will be presented. Finally, results of applying URA liberalization to the model will be summarized.

Results

Economic Welfare Effects

A measure of economic welfare effects is presented as a summary measure of the effects of the changes in trade barriers. This measure attempts to capture, in a single number, the overall benefit or cost to the economy resulting from these changes; therefore, it aggregates various (possibly offsetting)

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[4] For a detailed discussion of tariff equivalents of quotas and the price-gap method, see Chapter 7 of this report. Also, on the price-gap method, see R. Baldwin, "Measuring Nontariff Trade Policies," NBER working paper #2978, May 1989, and Deardorff and Stern, "Methods of Measurement of Non-tariff Barriers," UNCTAD/ST/MD/28 (Geneva: United Nations Conference on Trade and Development, 1985).
[5] Cabotage is a term used in the maritime transport industry to indicate the carriage of products or people between two ports within a country—such as between Anchorage and Los Angeles in the United States.
[6] Except for the peanut sector, which is not represented in the general equilibrium model.

effects. Economic theory suggests that, as the significant import restraints are lifted, capital and labor will move to sectors that are more productive in utilizing these inputs. Also, consumers and producers that use products formerly subject to import restraints will experience lower prices for these goods which increases the purchasing power of their budgets. Consumers will benefit from the elimination of income transferred from U.S. purchasers to the foreign and domestic firms and individuals that have held import quotas. Finally, the welfare effect captures losses in employment and profits that occur as imports replace production and employment in some sectors. If the output of previously protected sectors declines, their upstream suppliers may also experience adverse effects as a result of diminished demand for their products.

Simultaneous liberalization of all considered trade barriers results in an estimated gain of approximately $15.5 billion for the U.S. economy in 1993.[7] As seen from the individual liberalization estimates (see table ES-1), liberalization in the textiles and apparel sector has an effect equal to 65 percent of the gain from total liberalization. Liberalization of restraints in textiles and apparel provided the U.S. economy an estimated $8.6 to $10.0 billion in 1993. The next largest effect is a result of liberalization of the maritime sector's Merchant Marine Act of 1920 (commonly referred to as the Jones Act). Of the five agricultural sectors examined, three (dairy, sugar, and meat) have measurable benefits from liberalization.

High MFN duties on textiles and apparel, steel, motor vehicles, nonrubber footwear, and audio and video equipment have particularly important effects. The effect of eliminating duties for textiles and apparel, estimated separately from the effects of eliminating quotas, is a welfare gain of $958 million (see chapter 3). The welfare change from an elimination of tariffs is estimated to be $162 million for steel, $122 million for vehicles,[8] $147 million for nonrubber footwear, and $98 million for audio and video equipment.

Employment, Output, and Trade Effects

Estimates are provided for the effect on employment, output, imports, and exports from the removal of import restraints for each sector individually, as summarized in table ES-2. Each of these simulations is constructed independently of the others.

Manufacturing

Automobiles

For the years 1992-1993 and 1993-1994 a voluntary export restraint (VER) of 1.65 million units per year was in place on imports of autos from Japan; imports in 1993 were at 97 percent of this quota. The estimated effect of the removal of the quota alone is a net welfare gain of $588 million. Simultaneously removing the tariff applied to motor vehicles increases the effect to about $710 million. The removal of both barriers results in a decrease in domestic automobile output of about $925 million (0.7 percent) and the loss of about 3,400 full-time equivalent jobs.

Textiles and apparel

Liberalization of all import restraints in the textile and apparel sectors causes significant increased import penetration. The largest import increase by far, both in dollar and percentage terms, is in

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Table ES-1
Economic welfare change from liberalization of all restraints, by sector, 1993

(Million dollars)

Sector	Economic welfare change
Simultaneous liberalization of all significant restraints[1]	15,490
Individual liberalization:	
Textiles and apparel[2]	10,037
Maritime transport (Jones Act)	2,790
Dairy	1,013
Motor vehicles	710
Sugar	661
Meat	185
Blast furnaces and steel mills	162
Non-rubber footwear	147
Home audio and video equipment	98
Industrial inorganic and organic chemicals	62
Rubber and plastic footwear	48
Ball and roller bearings, and parts	47
Ceramic wall and floor tile	41
Frozen fruit, fruit juices, and vegetables	24
Costume jewelry and costume novelties	11
China tableware	11
Personal leather goods	11
Leather gloves and mittens	6
Cotton	0.3

[1] Does not include the effects of liberalization of peanut quotas.

[2] Upper bound of estimates. See chapter 3.

Source: Estimated by the staff of the USITC.

Table ES-2
Economic effects of liberalization, individual simulations, by sectors, 1993

Sector	Employment Number[1]	Employment Percent	Output Dollar[2]	Output Percent	Imports Dollar[2]	Imports Percent	Exports Dollar[2]	Exports Percent
Liberalized sectors:								
Manufacturing:								
Motor vehicles	-3,419	-0.7	-925	-0.7	1,202	1.4	-25	-0.2
MFA sectors:[3]								
Broadwoven fabric mills	-10,234	-3.4	-1,380	-3.4	571	18.9	-107	-3.0
Narrow fabric mills ..	-391	-1.5	-35	-1.5	15	10.4	-6	-1.4
Yarn mills and textile finishing.	-3,617	-2.7	-488	-2.7	33	9.6	-6	-2.4
Thread mills	-300	-3.5	-45	-3.5	7	8.0	-5	-3.2
Floor coverings	-487	-0.6	-85	-0.7	112	12.9	-3	-0.5
Felt and textile goods, n.e.c.	-355	-1.5	-40	-1.5	10	2.0	-7	-1.4
Lace and knit fabric goods	-2,754	-4.6	-520	-4.6	52	18.5	-16	-4.3
Coated fabrics, not rubberized	-232	-2.1	-46	-2.1	22	5.9	-19	-1.9
Tire cord and fabric ..	3	(5)	(4)	(5)	(4)	3.3	(4)	0.1
Cordage and twine ..	-112	-1.4	-7	-1.4	5	3.4	(4)	-1.2
Nonwoven fabric	-28	-0.3	-14	-0.3	3	2.4	(4)	-0.2
Women's hosiery, except socks	-150	-0.3	-12	-0.3	8	14.9	(4)	-0.2
Hosiery, n.e.c.......	-238	-0.4	-20	-0.4	9	7.2	(4)	-0.3
Apparel made from purchased materials	-36,110	-5.3	-3,634	-5.3	8,001	20.7	-220	-5.0
Curtains and draperies	-25	-0.1	-3	-0.1	17	14.7	(4)	0.6
House furnishings, n.e.c..	-364	-1.1	-89	-1.1	199	12.4	(4)	-0.3
Textile bags	-45	-0.6	-6	-0.6	6	9.5	(4)	0.1
Canvas and related products	-68	-0.4	-6	-0.4	12	8.2	(4)	0.3
Pleating, stitching, trimmings and schiffli embroidery	-871	-1.6	-169	-1.6	21	13.6	(4)	-0.6
Fabricated textile products	-81	-0.3	-14	-0.3	21	1.9	4	0.4
Luggage	-814	-7.9	-58	-8.0	322	14.4	-13	-7.3
Women's handbags and purses	4	0.1	(4)	(5)	113	9.1	6	15.3
Agricultural sectors:								
Sugar	-1,633	-6.7	-668	-6.7	613	72.4	-10	-4.1
Sugar-containing products	-61	(5)	-18	(5)	52	1.6	3	(5)
Butter	-225	-3.9	-108	-3.9	1	18.1	-5	-3.8
Cheese	-633	-2.9	-441	-2.9	401	59.1	-1	-2.4
Dry/condensed milk products	-700	-3.4	-304	-3.4	346	62.1	-13	-2.8
Cream	-480	-0.6	-180	-0.6	2	39.1	(4)	-0.5
Meat	-45	-0.3	-193	-0.3	204	7.4	-10	-0.3
Cotton	(5)	(5)	(4)	(5)	(4)	12.7	(4)	(5)
Maritime transportation (cabotage)	-2,450	-22.8	-745	-22.8	1,070	35.7	(6)	(6)

See footnotes at end of table.

Table ES-2—Continued
Economic effects of liberalization, individual simulations, by sectors, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
High MFN tariff sectors (except motor vehicles):								
Ball and roller bearings	-393	-1.2	-87	-1.2	68	5.4	-12	-1.1
Ceramic wall and floor tile	-676	-7.2	-59	-7.2	62	10.7	-2	-4.5
China tableware	-263	-7.0	-33	-7.0	36	9.6	4	6.8
Costume jewelry and costume novelties	-257	-1.5	-30	-1.5	67	6.4	-3	-1.3
Footwear, nonrubber	-1,316	-2.0	-82	-2.0	426	7.1	37	6.1
Footwear, rubber and plastic	-113	-1.7	-7	-1.7	296	8.2	1	0.7
Frozen fruit, fruit juices and vegetables	-287	-0.8	-95	-0.8	123	15.7	-5	-0.7
Industrial inorganic and organic chemicals	-241	-0.1	-118	-0.1	106	0.7	-15	-0.1
Household audio and video equipment ..	-466	-1.3	-222	-1.3	528	3.1	-49	-0.8
Leather gloves and mittens	-139	-6.0	-8	-6.0	18	11.8	-1	-4.3
Personal leather goods	-200	-2.9	-18	-2.9	29	8.7	-1	-2.8
Products from blast furnaces and steel mills	-1,265	-0.4	-350	-0.4	285	2.8	-21	-0.4

[1] Full-time equivalents.
[2] In millions of dollars at base year prices.
[3] Textile and apparel estimates are upper bound figures. See chapter 3.
[4] Change less than $500,000.
[5] Change less than 0.05 percent.
[6] Not applicable.
Source: Estimated by the staff of the USITC.

apparel made from purchased materials (apparel), with an increase of about $8.0 billion in imports, representing a 20.7-percent gain over original levels. Broadwoven fabrics are next, with a $571 million increase in imports (18.9 percent). Apparel and broadwoven fabric mills also have the largest losses in employment and output among the MFA sectors. Apparel made from purchased materials experiences a decline of about $3.6 billion in output and a decline of about 36,000 displaced full-time equivalent workers (jobs). Broadwoven fabric mills experience a decline in output of over $1.3 billion and about 10,000 jobs.

Agriculture

Of the five agricultural sectors analyzed in this study, four are analyzed in a general equilibrium framework (sugar, dairy products, cotton, and meat). The effects of removing the quotas in cotton are extremely small, since cotton imports are negligible.

Removal of import restraints results in an increase in import penetration for the five liberalized agricultural sectors. Imports of sugar and sugar-containing products would go up by a total of $665 million. Among dairy subsectors, imports of cheese and dry or condensed dairy products would increase by approximately 60 percent, or $401 and $346 million respectively. Elimination of the import barriers in meat would result in increased imports of $204 million, or 7.4 percent. Employment losses in the sugar and sugar-containing products industries were estimated as approximately 1,700 jobs; job loss in the four dairy sub-sectors is estimated at about 2,000 jobs, and meat would lose less than 100 full-time equivalent jobs.

Analysis of the benefits of the liberalization of restraints in the peanut sector is conducted using a partial equilibrium framework. Liberalization in the peanut sector brings a welfare gain of $93 million to consumers from lower peanut prices. The producer loss is estimated to be $92 million.

Services

With the exception of transportation services, in general significant U.S. import restraints in services do not exist. While foreign providers of some services face constraints on operations in the United States, most of these barriers are, in fact, requirements that foreign service providers adhere to the same domestic regulatory schemes faced by domestic providers of the service.

Within transportation services, the air transport sector has significant restraints in the form of restrictive regulations and bilateral agreements that effectively restrain international air transport services. However, the ways in which international air transport prices are negotiated, and the lack of consistent price data preclude formal modeling of this service sector.

Maritime transport likewise is subject to significant import restraints by means of restrictive regulations. One of the more important set of restrictions is the Merchant Marine Act of 1920 (Jones Act), which prohibits foreign vessels from carrying domestic freight between U.S. ports (cabotage). It is possible to estimate a tariff equivalent with the price-gap method for Jones Act trade and conduct analysis using the USITC CGE model.

Imports of "cabotage services" would rise by about $1.0 billion, while domestic production in this sector would fall by $745 million. Employment in this sector would drop by about 2,500 full-time jobs, as estimated.

High MFN Tariff Sectors

The high MFN tariff sectors are those sectors which, regardless of the existence of quantitative restrictions, had tariffs meeting the "significant tariff" criteria described above. For these sectors, liberalization causes significant import penetration. Among the high tariff sectors, motor vehicle imports increase the most as a result of elimination of the duty alone, with a $980 million (1.2 percent) gain. (Table ES-2 reports the effect of removing the duty and VER together.) Imports of household audio and video equipment increase by $528 million (3.1 percent), and nonrubber footwear by $426 million (7.1 percent). Other effects of tariff liberalization in these high tariff sectors vary widely, as shown in table ES-2 and chapter 6.

Welfare Effects of the Uruguay Round Agreements

The GATT URA entered into force in 1995. The agreements provide for the reduction or elimination of many tariff and nontariff barriers, including the elimination (through tariffication) of all quotas on agricultural goods and the phaseout of quotas on textile and apparel goods in place under the MFA.[9] Among those sectors included in this report as having significant import restraints, some are found to be likely to be affected by terms of the URA as they apply in 1995. Estimates of the effects are made for the hypothetical case that would have arisen had the current (1995) tariff and quota provisions of the URA been applied in 1993, the base year of the current USITC CGE model. Tariff liberalizations under the URA will generally be phased in over a 10 year period, so that the first-year effects can be expected to be small. However, significant first-year reductions do affect coated fabrics among the textile and apparel industries (a -1.5 percentage point tariff reduction). For goods with high MFN tariffs, those with significant tariff reductions under the first year URA are ceramic tile

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[9] Import quantity restrictions associated with the MFA are not included in the present analysis because product categories and country-specific restrictions underwent substantial modifications between 1993 and 1995.

(-1.0 percentage point) and china tableware (-1.0 percentage point). The sectors examined in this report that have significant declines in import quotas during the first year of the URA are meat and dairy products.

Compared to the complete elimination of all significant trade restraints in the sectors under consideration, the quantifiable effects of the partial reductions called for in 1995 by the URA are small. For textiles and apparel products, the reduction of tariffs under the URA produces an estimated welfare gain of about $15 million; for dairy products, the gain is $154 million, and for meat the gain is $157 million. For all of the sectors analyzed in this report having high MFN tariffs, the simultaneous reduction of their duties in accord with the URA yields a welfare gain of $20 million.

The simultaneous application of URA agreements to reduce tariffs and import quotas in the sectors analyzed in this report produces an increase in net welfare of $321 million, resulting mostly from the lower prices paid by consumers. The greatest effects are in the meat and dairy sectors, which respectively account for $157 million and $154 million of the welfare gain. In this scenario, the largest declines in domestic production occur in the meat sector ($137 million), dry and condensed milk ($57 million), and household audio and video equipment ($55 million).

CHAPTER 1
Introduction

Scope of the Study

This study analyzes the economic effects of significant U.S. import restraints on the U.S. economy and updates an earlier report by the U.S. International Trade Commission (USITC) that was transmitted to the United States Trade Representative (USTR) in November 1993.[1,2] The purpose of this study and its predecessor study is to provide a quantitative assessment of the effect of significant U.S. import restraints on U.S. firms, workers, and consumers and on the net economic welfare of the United States. These import restraints include tariffs and nontariff barriers (NTBs) such as quotas, voluntary restraint agreements (VRAs), and voluntary export restraints (VERs).[3]

The study provides an economywide assessment of the effects of simultaneously liberalizing all of the sectors covered by significant import restraints (chapter 2) as well as an assessment of liberalizing each of these sectors individually (chapters 3-6). The report estimates the effects of the restraints, by sector, on the value of output (domestic production), domestic employment levels, and the value of exports

and imports. Effects on consumers occur through changes to income and prices that are measured as changes in net welfare.

The original request letter from USTR (see appendix A) requested that the Commission provide quantitative assessments of the restraints' effects using partial equilibrium and general equilibrium frameworks. Therefore, analyzing the effects of the restraints for this investigation required the use of model-based simulations that are described below. All of the estimated economic effects that are discussed in this report are derived from computable general equilibrium or partial equilibrium models.

The base year for this study is 1993, the latest year for which the necessary data are available for the policy simulations. Consequently, this analysis examines those domestic import restraints that were in effect in 1993. However, modifications to these restraints took effect at the beginning of 1995 as a result of the General Agreement on Tariffs and Trade (GATT) Uruguay Round Agreements (URA). To provide an assessment of significant U.S. import restraints as they currently exist, the estimated effects of the 1995 URA tariff and quota reductions are also examined. However, these reductions are applied to the 1993 U.S. economy. Therefore, two analyses are conducted in the chapters that cover agricultural and manufacturing sectors (chapters 2-4 and chapter 6). The first analysis examines the effects of completely liberalizing the covered sectors in 1993. That is, it is assumed that all U.S. tariffs and NTBs are removed on the covered sectors in that year. Using 1993 as the base year, the second analysis simulates the expected effects of tariff and quota reductions under the GATT URA in 1995 on each of the covered sectors. However, in the second analysis, only U.S. liberalization is considered; i.e., the analysis does not consider the effects of increased U.S. exports resulting from other countries' liberalizations under the URA.[4]

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[1] See USITC, *The Economic Effects of Significant U.S. Import Restraints*, USITC publication 2699, Washington, DC, Nov. 1993.

[2] Previous USITC studies requested by the U.S. Congress addressed liberalizing significant U.S. import restraints on a sector-by-sector basis in manufacturing, agriculture, and services, respectively. These reports are USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase I: Manufacturing*, USITC publication 2222, Washington, DC, Oct. 1989; USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase II: Agricultural Products and Natural Resources*, USITC publication 2314, Washington, DC, Sept. 1990; and USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase III: Services*, USITC publication 2422, Washington, DC, Sept. 1991.

[3] This report excludes, by request of USTR (see appendix A), import restraints resulting from final antidumping or countervailing duty investigations, section 337 or 406 investigations, or section 301 actions.

[4] The effects of the GATT URA were assessed by the Commission in USITC, *Potential Impact on the U.S. Economy and Industries of the GATT Uruguay Round Agreements*, USITC publication 2790, June 1994. The

With respect to NTBs, the report uses the same definition of a "significant" import restraint used in the previous 1993 USITC study. That is, significant NTBs are "binding" when the quantity of imports is actually restricted by the barriers in place. On the other hand, if the quantity of imports is significantly less than the quantity specified by the NTBs, then the NTBs are "nonbinding" and do not affect the price of imports.[5] Consequently, all binding NTBs in this study are considered to be significant while nonbinding quotas are not analyzed.

During 1993, the following quantitative restraints on certain U.S. imports were in place: the Multifiber Arrangement (MFA); the automobile VER, the machine tool and meat VRAs; the agricultural quotas on cotton, dairy, peanuts, and sugar; and the ban on the importation of cabotage maritime services.[6] Of these sectors, only the machine tool VRA was found to be nonbinding in 1993. Consequently, quantitative estimates for this sector are not provided.

A significant tariff is defined in this study as (i) having either a Most Favored Nation (MFN) average ad valorem tariff rate of at least 7.5 percent, calculated on a CIF basis, and over $100 million in imports, or (ii) generating tariff revenues of over $350 million, or both. Thirteen sectors fall into one or both of these categories.[7] As shown in chapter 2, simultaneous liberalization of these sectors, in addition to those sectors with quantity restrictions, accounts for a substantial portion of the estimates of total welfare change for the entire economy.[8] This

definition is more inclusive than the 1993 report;[9] however, it does not substantially change the welfare effects that would have been estimated otherwise.[10]

Approach of the Study

For this study, as was done in the previous study, a computable general equilibrium (CGE) model is used to estimate the economywide and sectoral effects for all sectors except peanuts.[11,12] General equilibrium models analyze interactions among producers and consumers within an economy in markets for goods, services, labor, and physical capital. The distinguishing feature of a general equilibrium model is its economywide coverage and multisectoral nature. A general equilibrium model explicitly accounts for upstream and downstream production linkages, and competition between sectors for labor and capital.[13] In addition, the general equilibrium approach considers the balance of trade, income transfers associated with quotas and tariffs, and economywide resource constraints for labor and

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[4]—Continued

analysis in that report examined the long-run effects of the URA on 48 U.S. sectors by using a partial equilibrium model to estimate quantitative effects. In addition, that analysis examined the effects of multilateral liberalization between the United States and its GATT-signatory trading partners. Consequently, the estimates from the 1994 report are not comparable to the estimates in this report.

[5] The point at which a quota is considered nonbinding is an empirical question specific to each sector with quotas and this question is considered in subsequent chapters of this report.

[6] Cabotage is a term used in the maritime transport industry to indicate the carriage of products or people between two ports within a country.

[7] These sectors include (1) motor vehicles, (2) nonrubber footwear, (3) home audio and video equipment, (4) industrial inorganic and organic chemicals, (5) rubber and plastic footwear, (6) ball and roller bearings, and parts, (7) frozen fruit, fruit juices, and vegetables, (8) ceramic wall and floor tile, (9) costume jewelry and costume novelties, (10) steel, (11) china tableware, (12) personal leather goods, and (13) leather gloves and mittens. The significant tariffs on motor vehicles are analyzed separately from the automobile VERs.

[8] For further discussion, see footnote 9 in chapter 2.

[9] In the 1993 report, the selection criteria for significant tariff levels were an MFN average ad valorem tariff rate of at least 9 percent (calculated on a dutiable value basis for 1991) and at least $100 million in dutiable imports covered by the tariff.

[10] Applying the "significant tariff" definition from the 1993 report to the current analysis, the simultaneous liberalization estimates of net welfare would fall less than 1 percent.

[11] In the request letter from the USTR (see appendix A), the USITC was asked to examine the removal of individual import restraints in a partial equilibrium framework and examine the simultaneous removal of all import restraints in a general equilibrium framework. In the previous 1993 study, after consultations with the USTR outlining the benefits of a general equilibrium approach over a partial equilibrium approach and coupled with the USTR's desire to compare results from simulations of individual restraint removal with the results of simultaneous liberalization of all restraints in a consistent framework, the USITC proceeded to analyze all but one (the peanut tariff-rate quota) of the significant U.S. import restraints in a general equilibrium approach, and that form of analysis is repeated here.

[12] The peanut sector is contained within the broader crop sector of the ITC CGE model and cannot be separated out. Therefore, the tariff-rate quota on peanuts will is assessed using a partial equilibrium approach.

[13] Partial equilibrium (PE) models generally specify a supply and demand structure for domestic output and for competing imports. PE models typically assume that any linkages between the sector that is analyzed and other sectors in the economy are held constant. In addition, PE models assume no movement of labor and capital between sectors.

capital. These additional features of general equilibrium models provide a more complete or comprehensive assessment of employment, output, and trade effects of policy changes.[14]

The general equilibrium approach models the removal of tariffs and NTBs as a reduction in the cost of imports in the protected sector. The resulting decline in the price of imports in the protected sector induces an increase in the quantity of imports demanded and, simultaneously, induces a reduction in the demand for the competing domestic product. The resulting decline in the quantity and price of the domestic product helps to explain the corollary decline in domestic employment. These estimates are the direct and primary effects of removing the import restraints.

The secondary effects of liberalization as it spreads to all other sectors in the economy are estimated by the CGE model as well.[15] These secondary, or indirect, effects are important since they can enhance or diminish the direct effects of liberalization in the protected sectors. In the model, these secondary effects occur mainly through changes to the real exchange rate[16] and the reallocation of production inputs—labor and capital. For example, when the wage-rental ratio[17] increases, the price of labor has risen relative to the price of capital, and consequently, producers have the incentive to use more capital and less labor to reduce costs. If liberalization raises the economywide wage-rental ratio, it is possible to see some sectors use fewer workers, despite producing more output.

Liberalization can also cause the U.S. real exchange rate either to depreciate or appreciate. If the real exchange rate depreciates from removing the import restraints, then the price of tradeable goods rises relative to nontradeable goods, raising both import and export prices. Thus, there is a tendency for consumers to import less and producers to export more. However, for the specific sectors that are liberalized, this economywide exchange rate effect is overshadowed by the increased import penetration due to lost protection (which in general increases imports and reduces domestic production and therefore exports). Consequently, the real exchange rate effect is more useful in explaining why sectors that are not directly affected by liberalization experience trade effects.[18]

USITC Model

The USITC CGE model used in this analysis is very similar to the model that was used in the 1993 report. The current model retains many of the same features of the previous model and is used to assess the effect of trade policy changes at one point in time. The basic structure of the model is described in technical detail in appendix C. However, there are two new features in the current model and its "social accounting matrix" (SAM) that warrant mention. First, the flexible-labor supply assumption is dropped, permitting a fixed-labor supply. The fixed-labor assumption allows net-welfare estimates to be calculated based only on price and real-income changes that occur as a result of trade liberalization.[19] Second, many of the behavioral and structural parameters of the protected sectors are updated.[20] As a consequence of these changes, the results of this model are not entirely comparable to the results in the previous report.

USITC Model Data

The data used by the USITC CGE model are in the form of a large SAM. The SAM organizes data in a consistent framework of interindustry flows, value added, imports, and final demand for 491 production

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[14] See Jaime de Melo and David Tarr, "Welfare Costs of U.S. Quotas in Textiles, Steel and Autos," Review of Economics and Statistics, vol. 72 (Aug. 1990), 489-97.

[15] The partial equilibrium approach does not consider any secondary liberalization effects in other sectors such as the changes that could result as capital and labor move from the less productive sectors to the more productive sectors of the economy.

[16] The exchange rate in the USITC model is defined as the relative price between tradeables and nontradeables and is referred to as the real exchange rate. The construction of the real exchange rate separates a country's goods and services that can be traded with other countries (tradeables) from those that cannot (nontradeables). This measure of the real exchange used in the USITC model should not be confused with the "nominal" exchange rate, which refers to relative currency valuations among countries. See Sebastian Edwards, "Real Exchange Rates in the Developing Countries: Concepts and Measurement," National Bureau of Economic Research working paper 2950, April 1989, for a discussion of the various definitions of real exchange rates used in economic research.

[17] The price of labor is the wage, whereas the price of capital is called the "rental price of capital." The ratio of these two prices is called the "wage-rental ratio."

[18] In some cases, the indirect effect of a depreciation of the real exchange rate may outweigh the direct effect of liberalization, namely the output decline, and make it possible for exports to rise in a some of the liberalized sectors.

[19] The flexible labor-supply assumption also captures welfare changes that result from changes in the consumption of leisure

[20] The behavioral and structural parameters are described in greater detail in appendix C.

sectors. The current USITC SAM is based on 1993 national accounts data provided by the Bureau of the Census, a 1987 Bureau of Labor Statistics (BLS) input-output table,[21] and 1993 trade flows from the U.S. Department of Commerce. The other major inputs into the USITC model are the parameters that represent the behavior of economic agents in the U.S. economy. These parameters are in the form of elasticities and are either estimated by the staff of the USITC or gathered from published sources.[22]

Analysis also requires estimates of U.S. import restraints. Tariffs are readily quantifiable. In addition to import data, the SAM contains the estimated duties collected by the Treasury from official statistics of Commerce. Average tariffs are calculated for each sector that is analyzed.

Although the quantified effects of NTBs in the market are difficult to model, one can estimate the tariff equivalent (TE) of the NTB, namely, a tariff that has the same effect on prices and quantities as the NTB. For all of the sectors with binding NTBs, a tariff equivalent is estimated and used in the USITC model to analyze the effects of liberalizing that sector. The techniques used in this study to quantify the price premium associated with a particular NTB are the price-gap method, the cost-push method, and the quota-auction method. These methods are discussed in greater detail in chapter 7.

Tariff equivalents that are estimated using the price-gap method measure the percentage differential between the U.S. domestic price of a good and the world price of that good. The method assumes that the price differential between the domestic and imported goods is caused entirely by the NTB. The application of the price-gap method depends primarily on the existence of reliable pricing data, and, for this study, was applied to the NTBs on sugar, cotton, meat, peanuts, dairy products, autos, and maritime transportation. However, reliable pricing data were not available for sugar-containing products and for textiles and apparel.

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[21] The input-output matrix was constructed by BLS, based on the 1982 BEA input-output model that was updated with 1987 census of establishments and National Income and Product Accounts (NIPA) data. See Bureau of Labor Statistics, *American Workforce: 1992-2005*, unpublished technical document, Office of Employment Projections, Washington, DC, Nov. 24, 1993 for further discussion.

[22] These parameters are described in more detail in USITC, *An Introduction to the ITC Computable General Equilibrium Model*, USITC publication 2423, Washington, DC, Sept. 1991.

In the case of sugar-containing products (SCPs), the cost-push method was used to obtain a tariff-equivalent. The tariff-rate quotas on SCPs are maintained to prevent the disruption of the upstream tariff-rate quotas on sugar. The cost-push method assumes that the TE for these downstream products is directly related to the TE for sugar. In brief, the TE for SCPs is derived by imposing the TE for sugar to the SCPs sector based on sugar's cost share in SCPs production.

In the case of textiles and apparel, the quota-auction method was used to obtain TEs for products that are restricted by the Multifiber Arrangement (MFA). This method used Hong Kong quota auction prices to approximate the price gaps caused by U.S. quotas against Hong Kong exports to the United States. However, quota auction prices were not available for exports to the U.S. market by other MFA-country suppliers. Consequently, for exports to the United States by these other MFA suppliers, Hong Kong quota auction prices were adjusted to reflect differences in wages and productivity for each of the specific country suppliers.

USITC Model Results

The USITC CGE model estimates both economywide results and sector-specific results. For the individual sectors highlighted in a particular policy simulation, the model specifically reports estimated changes in employment, output, imports, and exports for the liberalized sectors, as well as for the other sectors that are upstream suppliers and downstream consumers to the liberalized sectors. The economywide results reported include the change in wages, the wage-rental ratio, the real exchange rate, and net welfare.

These results are reported for the simulations that examine the effects of completely liberalizing the covered sectors in 1993. In the case of the simulations that examine the expected effects of the GATT URA in 1995, most of these results are negligible. Consequently, the discussion of the results of the URA simulations focus primarily on the estimated changes to net welfare.

The net-welfare effect reported by the USITC CGE model measures the net-welfare change of U.S. consumers, or more exactly, of U.S. households, as a result of a policy change in the economy. In measuring welfare changes, a general equilibrium model does not isolate individuals as consumers or producers. The two groups are linked by the flow of payments from households to firms for goods and services and by the flow of income from firms to households for factors of production. Therefore,

changes in the income of firms from liberalization translate into corresponding changes in the income of households. The net welfare measure includes the change in income payments to households from firms that results from the removal of import restraints and captures the income gain that consumers experience from lower prices due to liberalization.

In addition to the income that flows between domestic households and firms, net welfare also accounts for income that accrues to the U.S. government, in the form of tariffs, or that accrues to foreign exporters or domestic importers, in the form of quota rents. Quota rents occur in the case where import restraints are in the form of a quantity restriction, such as a quota or VER. These quantity restrictions generate rents, or above-normal income, that might accrue to either foreign exporters or domestic importers, depending on who holds the quota rights to import these goods into the United States.[23] Specifically, net welfare is measured in the USITC model using a concept that measures the income change that would be needed, at base year prices, for households to remain equally well off under trade liberalization as they are with import restraints in place.

It should be noted that the estimates obtained from the CGE model emphasize the effect of import restraints in isolation from all other factors that affect the economy such as U.S. fiscal and monetary policies as well as trade policies in foreign countries. In addition, the results do not incorporate expected future changes in the economic variables that are analyzed; therefore, the estimates of this analysis are not forecasts. Finally, the model is a static model that assesses the impact of trade policy changes at one point in time. Consequently, the model does not capture dynamic effects that may result from trade liberalization such as an increase in the rate of economic growth in the U.S. economy.

Organization of the Study

Chapter 2 presents the results of simultaneously liberalizing all significant import restraints analyzed

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[23] See chapter 7 for further discussion of quota rents.

individually in the subsequent chapters. In this model simulation, the only upstream and downstream linkages discussed are those among the liberalized sectors themselves. This analysis highlights the importance of economywide considerations of an economic policy.

Chapter 3 presents the results of liberalizing the significant quantitative restrictions in the manufacturing sector. They include the Multifiber Arrangement and the automobile VER. The machine tool VRA was not analyzed quantitatively, but a brief review of its history is provided in this chapter.

Chapter 4 presents the results of liberalizing the significant quantitative restrictions in the agricultural sector. These include the dairy, peanut, sugar, and cotton quotas and the VRA in the meat sector.

Chapter 5 describes the results of liberalizing a significant quantitative restriction in the services sector, namely, the restrictions placed on maritime transport services under the Merchant Marine Act of 1920, commonly referred to as the Jones Act. Also, this chapter provides a brief discussion of other service sectors.

Chapter 6 illustrates the results of individually liberalizing sectors protected only with significant MFN tariffs. Thirteen sectors have been identified, and each is discussed in turn starting from the sector with the largest estimated welfare impact to the sector with the smallest. These sectors correspond to those in the USITC CGE model and are defined as rough equivalents to either 2-digit, 3-digit, or 4-digit, Standard Industrial Classification (SIC) industries.

Finally, chapter 7 provides a brief overview of the ongoing research regarding measurements of NTBs. The literature on measuring NTBs has grown in recent years, and current research appears potentially applicable to some of the sectors that are analyzed in this report. Chapter 7 discusses a framework for the broad application of these methods in future studies as the necessary data become available.

CHAPTER 2
Simultaneous Changes in All Significant U.S. Import Restraints

This chapter includes two analyses examining the effects of simultaneous changes in the significant U.S. import barriers identified in this report. The first looks at the impact of simultaneously eliminating all significant U.S. import restraints that were in place during 1993. This analysis estimates the overall effect of significant measures of import relief on the U.S. economy. It isolates the sectors that have significant U.S. import barriers to illustrate the effect their removal would have on these sectors as well as on the remainder of the U.S. economy.

The second analysis in this chapter examines the economic effects expected in the first year of the GATT Uruguay Round Agreements (URA), which provided for the relaxation of several of these significant import barriers. Specifically, the analysis focuses on the effects of unilaterally relaxing certain significant import barriers so they satisfy the U.S. commitments for 1995 GATT implementation.

Identification of Significant Import Restraints

This study identifies 45 sectors in the U.S. economy with significant import restraints. These barriers take two general forms: import quantity restrictions and high Most Favored Nation (MFN) tariffs. Table 2-1 lists the 44 sectors[1] with import protection used in this analysis, their 1993 MFN tariff rates, tariff equivalent estimates of their import quantity restrictions, and the quota rents associated

with those sector-specific quotas.[2] Products covered under the Multifiber Arrangement (MFA) are represented in the first 22 sectors listed. The motor vehicles sector[3] is identified separately as it had a binding voluntary export restraint (VER) in 1993 as well as MFN tariff revenues that allow it to be classified within the high-tariff group.[4] The next eight sectors include specific agricultural products that have binding quotas and are large enough to be analyzed in the USITC CGE model.[5] The Merchant Marine Act of 1920 (commonly called the Jones Act) places important restrictions on maritime transportation between U.S. ports. Maritime transportation services is the only service sector included in this analysis. The last 12 sectors are called the "high MFN tariff sectors" as they are not subject to quota restrictions, but they have significant MFN tariff rates.

Ad valorem tariffs are shown in the first column of table 2-1 and are applied to imports in all sectors

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[1] One sector omitted from the simultaneous liberalization simulation is the peanut sector. This sector is too small to be identified in the USITC model, but the partial equilibrium analysis in chapter 4 indicates that eliminating the import restrictions in this sector generates a $93 million increase in consumer welfare and a $92 million loss in producer surplus.

[2] Economic rent in the context of an import quantity restriction refers to profits accruing to owners of a quota which are derived from higher prices that occur because the quantity restriction induces artifical scarcity in the market. See chapter 7 and USITC, *The Economic Effects of Significant U.S. Import Restraints*, USITC publication 2699, Nov. 1993, p. 1 for additional discussion of economic rent.

[3] This sector includes passenger automobiles, pickup trucks, commercial cars and buses, special purpose motor vehicles, and chassis and passenger car bodies.

[4] The selection criteria for the high-tariff sectors are outlined in chapter 1 and discussed further in chapter 6.

[5] The USITC model is based on 6-digit Bureau of Economic Analysis sectors. However, some commodities (e.g. peanuts) make up a very small component of a larger sector, which precludes a proper general equilibrium analysis of policy changes specific to that sector. Alternative techniques such as partial equilibrium analyses can be used in these instances.

Table 2-1
Significant U.S. import restraints, by sector, 1993

Focus sector	Average MFN Tariff Rate[1]	Tariff Equivalent[2]	Quota Rents[3]
		(Percent)	
MFA sectors:			
Apparel made from purchased materials	15.0	19.9	5,575
Broadwoven fabric mills	12.8	9.5	233
Canvas and related products	8.0	5.2	7
Coated fabrics, not rubberized	9.8	1.0	3
Cordage and twine	4.6	1.2	2
Curtains and draperies	11.4	12.1	11
Fabricated textile products, n.e.c.	3.2	0.6	6
Felt and textile goods, n.e.c.	4.3	0.1	(4)
Floor coverings	5.8	9.3	70
House furnishings, n.e.c.	8.0	13.9	181
Hosiery, n.e.c.	6.9	2.4	3
Lace and knit fabric goods	13.1	5.9	14
Luggage	12.5	10.4	188
Narrow fabric mills	7.8	3.3	4
Nonwoven fabric	3.2	0.2	(4)
Pleating, stitching, trimmings, and schiffli embroidery	9.6	7.6	10
Textile bags	6.4	9.0	5
Thread mills	9.7	2.2	2
Tire cord and fabric	1.6	2.4	(4)
Women's handbags and purses	13.3	3.1	33
Women's hosiery, except socks	16.0	2.3	1
Yarn mills and textile finishing.	9.1	3.1	9
Motor vehicles	2.0	0.4	327
Agricultural sectors:			
Butter	8.8	20.8	(4)
Cheese	8.4	37.4	143
Cotton	(5)	27.0	(4)
Cream	3.1	60.3	2
Dry/condensed milk products	0.1	60.3	209
Meat	1.0	5.0	130
Sugar	0.5	93.7	408
Sugar-containing products	2.4	1.5	47
Maritime transportation	(6)	89.1	(6)
High MFN tariff sectors:			
Ball and roller bearings	8.5	(6)	(6)
Ceramic wall and floor tile	17.1	(6)	(6)
China tableware	12.2	(6)	(6)
Costume jewelry and costume novelties	7.3	(6)	(6)
Footwear, nonrubber	9.4	(6)	(6)
Footwear, rubber and plastic	26.1	(6)	(6)
Frozen fruit, fruit juices, and vegetables	15.1	(6)	(6)
Household audio and video equipment	3.8	(6)	(6)
Industrial inorganic and organic chemicals	4.9	(6)	(6)
Leather gloves and mittens	13.8	(6)	(6)
Personal leather goods	8.0	(6)	(6)
Products from blast furnaces and steel mills	4.4	(6)	(6)

[1] Ad valorem tariff rate, c.i.f. basis, concorded specifically for the USITC CGE model.
[2] Tariff equivalent quota premium rate of quantity restrictions.
[3] In millions of dollars.
[4] Less than $500,000.
[5] Less than .05 percent.
[6] Not applicable.

Sources: Ad valorem tariff equivalents compiled from official statistics of the U.S. Department of Commerce. Tariff equivalents of the quotas are estimated by USITC staff. Quota rents are calculated by USITC staff using the USITC CGE model.

except maritime transportation.[6] Quantitative import restrictions were in place for 32 of the 44 sectors recognized as having significant import barriers. Quantity restrictions are represented in the USITC CGE model through the use of ad valorem tariff equivalents of the import quotas, which are estimated using the methods described in chapter 7 and are reported in the second column of table 2-1. The price-gap approach is the primary technique used to estimate these tariff equivalents. However, quantity restrictions in the MFA and sugar-containing products sectors are estimated by employing alternative techniques,[7] details of which are presented in chapters 3 and 4, respectively.[8]

Rents generated by the import quantity restrictions are estimated by the USITC CGE model and reported in column three of table 2-1. As a group, the 22 textile and apparel sectors (MFA sectors) produce an estimated $6.4 billion in quota rents. These rents are heavily concentrated in one sector, apparel made from purchased materials (apparel), which produces 87.7 percent of the total MFA rents. Quantity restrictions on the 8 agricultural products modeled lead to an estimated $939 million in quota rents. Unlike the MFA group, the quota rent generated by this set of products is more evenly distributed among the group. The automobile VER was responsible for an estimated $327 million transfer to the importers of automobiles subject to import restrictions.

Economywide Effects of Removing All Significant U.S. Import Restraints

The first analysis in this chapter addresses the United States Trade Representative's request for a quantitative assessment of the *overall* impact of

removing significant U.S. import restraints. The overall effect of import relief is obtained by simultaneously liberalizing the 1993 level of protection in all 44 sectors identified to have significant import barriers.

Estimates of the overall effects are found using the USITC CGE model, which explicitly accounts for linkages among all sectors in the economy. This model allows the liberalization in one sector to affect all other sectors, including other liberalized sectors. Therefore, the results reported in this chapter are not a summation of the *individual* liberalization results reported in the following chapters, but instead this chapter's results account for the cross-commodity interactions that are present in the model. In addition, the interaction between sectors that results from simultaneous liberalization may produce changes in output, employment, imports, or exports of a different direction than those reported in the individual sector analyses.

In the USITC CGE model, firm income is remitted to households in the form of wages and rents for the use of capital, so changes in firm income translate into changes in consumer income. Therefore, the net welfare measure derived in this analysis captures the impact on consumers net of the income effects due to gains and losses incurred by the firms as a result of eliminating all the identified significant import restrictions. Simultaneous liberalization of all import restraints described in this study results in a net welfare gain of approximately $15.5 billion for the year 1993.[9] This result implies that the simultaneous removal of the significant import barriers discussed in the report are approximately equivalent to a $15.5 billion increase in consumer incomes.

Several economic factors are responsible for the gains in welfare associated with the removal of import barriers. First, as the significant import restraints are lifted, capital and labor move to sectors that are more productive in utilizing these inputs. Second, consumers and producers that use products formerly subject to import restraints will experience lower prices for these goods which increases their purchasing power. Third, welfare increases with the removal of the quota rents that are transferred from U.S. purchasers to the foreign and domestic firms and individuals that held those import quotas. For quota rent payments, the extent to which transfers to

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[6] Cotton is subject to MFN tariff rates; however, total duties collected in 1993 result in an average tariff rate that is less than 0.005 percent. Maritime transportation is not subject to MFN tariffs.

[7] The quota-auction price method and the cost-push method are used for the MFA and sugar-containing product sectors, respectively.

[8] In the present analysis, the estimated tariff equivalent quota premiums for the textile and apparel sectors (MFA sectors) are estimated under the assumption that a quota is binding when 80 percent of the targeted imports are supplied. The analysis of the MFA in chapter 2 also reports results based on estimated tariff equivalent quota premiums under the assumption that quotas are binding when 90 percent of the targeted imports are supplied.

[9] The welfare gain generated by the simultaneous liberalization of all tariffs in the rest of the economy sectors in addition to the tariffs and nontariff import restraints identified separately in this report is $15.62 billion.

foreigners are eliminated is especially important because this represents a component of expenditure for which there is no domestic income or consumption of goods or services.

Liberalization of all significant import restraints has costs as well. The costs captured in this analysis include losses in employment and profits that occur as imports replace production and employment in some sectors. If previously protected sectors decline, their upstream suppliers may also experience adverse effects as a result of diminished demand. These interactions are captured in the USITC CGE model and are reflected in the estimated effects that are reported in this chapter.

Other economywide results from liberalization include an estimated 0.05 percent drop in the ratio of labor wages to capital's returns, indicating that labor's remuneration rate is expected to decline very slightly relative to the returns accruing to capital. Removal of all significant import restraints also causes a 0.5 percent depreciation in the real exchange rate. This tends to lower import demand and increase the overall export competitiveness of the U.S. economy. However, for the previously protected sectors, the exchange rate effect is generally offset by sector-specific decreases in import prices, which increase import demand. The latter sector-specific effect is strong enough to cause a real increase in total imports of 1.9 percent, whereas the exchange rate change helps stimulate a real increase in aggregate exports of 0.4 percent.

Sectoral Effects of Removing All Significant U.S. Import Restraints

Table 2-2 illustrates the sector-specific effects on employment, output, imports, and exports of simultaneously removing all significant U.S. import restraints. In general, the previously protected sectors decline in terms of production and employment when import barriers are eliminated and the rest of the U.S. economy gains. The following discussion first describes the effects of removing import relief from the previously protected sectors identified separately (focus sectors) in the report and concludes with a description of the economic impact on the nine aggregate sectors that represent the remainder of the U.S. economy.

Focus Sectors

The primary effect of removing the tariffs and quotas on the focus sectors is a reduction in the prices of imported goods. This generally leads households to shift consumption from domestically produced goods to imports in the liberalized sectors. However, because some of these sectors have important upstream and downstream linkages to other liberalized sectors, these relationships have effects that may strengthen or counteract the direct impact of trade liberalization. For example, although the import restrictions on women's handbags and purses, rubber and plastic footwear, and tire cord and fabric are eliminated, domestic output and employment in those sectors rise as a result of full liberalization. The effects of these linkages are described in the discussion below.

As a group, elimination of the MFA quotas and tariffs account for the largest effects among the focus sectors. Textile and apparel product imports are estimated to increase $9.6 billion, or 18.6 percent on average, displacing domestic production and employment in these sectors. Employment is estimated to fall by 57,251 full-time equivalent workers in the MFA sectors and domestic production is $6.6 billion lower after imports are liberalized.

Luggage, apparel, broadwoven fabric mills, thread mills, and lace and knit fabric goods sectors experience the largest estimated changes as a result of complete liberalization. Model results indicate that employment and output fall by at least 3.4 percent in each of these sectors and with the exception of thread mills, imports increase by at least 15.7 percent. The effect of import liberalization on exports from these sectors is also large relative to the other MFA sectors. Import liberalization raises the price of exports relative to domestic sales. This results in a higher share of domestic production being sold in export markets. However, this price effect is offset by a reduction in total output in these sectors. The net effect is a drop in exports of at least 3.0 percent.

There are two primary reasons for the large changes in these sectors. First, the removal of significant import restraints in these sectors yields strong price competition from imports that generally shrinks the domestic industries. For example, in four of the five sectors above (excluding thread mills), the MFN tariff rates being eliminated are above 12.5 percent and the quota restrictions, as measured by the tariff equivalents, are among the highest.

Second, the effects in the thread mills sector are driven mainly by the impact of changes in downstream sectors. The relatively small increase in

Table 2-2
Economic effects of simultaneous liberalization, by sector, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Focus sectors								
MFA sectors:								
Apparel made from purchased materials	-36,105	-5.3	-3,628	-5.3	7,970	20.7	-220	-5.0
Broadwoven fabric mills	-10,114	-3.4	-1,362	-3.4	569	18.8	-105	-3.0
Canvas and related products	-55	-0.3	-5	-0.3	12	8.2	(3)	0.4
Coated fabrics, not rubberized	-226	-2.1	-45	-2.1	22	5.8	-18	-1.8
Cordage and twine	-93	-1.2	-6	-1.2	5	3.3	-1	-1.0
Curtains and draperies	-12	-0.1	-1	-0.1	17	14.8	(3)	0.7
Fabricated textile products	-60	-0.2	-11	-0.2	21	1.9	5	0.5
Felt and textile goods, n.e.c	-335	-1.4	-37	-1.4	10	1.9	-6	-1.3
Floor coverings	-481	-0.6	-83	-0.6	111	12.8	-3	-0.4
House furnishings, n.e.c	-341	-1.0	-82	-1.0	199	12.4	(3)	-0.2
Hosiery, n.e.c	-224	-0.4	-19	-0.4	9	7.2	(3)	-0.3
Lace and knit fabric goods	-2,744	-4.5	-517	-4.6	52	18.3	-15	-4.3
Luggage	-1,162	-11.3	-83	-11.3	352	15.7	-18	-10.6
Narrow fabric mills	-380	-1.5	-34	-1.5	15	10.3	-6	-1.3
Nonwoven fabric	-27	-0.3	-13	-0.3	3	2.2	(3)	-0.2
Pleating, stitching, trimmings and schiffli embroidery	-976	-1.8	-189	-1.8	20	13.2	(3)	-0.7
Textile bags	-44	-0.5	-6	-0.5	6	9.3	(3)	0.4
Thread mills	-302	-3.5	-45	-3.5	7	7.9	-5	-3.2
Tire cord and fabric	1	(4)	(3)	(4)	1	3.4	(3)	0.1
Women's hosiery, except socks	-138	-0.3	-11	-0.3	8	14.8	(3)	-0.2
Women's handbags and purses	17	0.3	2	0.3	115	9.2	7	15.7
Yarn mills and textile finishing	-3,451	-2.6	-465	-2.6	33	9.7	-6	-2.3
Motor vehicles	-2,098	-0.4	-587	-0.4	1,125	1.4	36	0.3
Agricultural sectors:								
Butter	-218	-3.8	-106	-3.8	1	17.8	-4	-3.5
Cheese	-602	-2.8	-423	-2.8	396	58.5	-1	-2.2
Cotton	-45	-0.4	-14	-0.4	1	10.8	6	0.3
Cream	-386	-0.5	-151	-0.5	2	38.9	-1	-0.1
Dry/condensed milk products	-672	-3.2	-295	-3.3	343	61.7	-13	-2.6
Meat	-374	-0.3	-121	-0.2	193	7.0	2	0.1
Sugar	-1,611	-6.6	-660	-6.6	610	72.0	-9	-3.8
Sugar-containing products	200	0.1	49	(4)	48	1.5	19	0.4
Maritime transportation:	1,590	1.0	861	1.4	848	8.6	967	4.7
High MFN tariff sectors:								
Ball and roller bearings	-322	-1.0	-72	-1.0	66	5.3	-9	-0.9
Ceramic wall and floor tile	-654	-4.4	-58	-4.4	61	9.5	-2	-3.9
China tableware	-252	-6.7	-31	-6.7	36	9.4	-4	-6.5
Costume jewelry and costume novelties	-110	-0.7	-13	-0.7	52	5.0	-1	-0.4
Footwear, nonrubber	-1,796	-1.4	-113	-1.4	388	6.5	32	5.3
Footwear, rubber and plastic	318	4.8	19	4.8	284	7.9	2	5.7
Frozen fruit, fruit juices and vegetables	-204	-0.6	-70	-0.6	106	13.6	-2	-0.3
Household audio and video equipment	-614	-1.7	-296	-1.7	337	2.0	-58	-1.0
Industrial inorganic and organic chemicals	-395	-0.2	-300	-0.2	260	1.8	-25	-0.1
Leather gloves and mittens	-125	-4.3	-9	-4.3	18	11.7	-1	-2.9
Personal leather goods	-135	-2.0	-12	-2.0	23	8.0	(3)	0.4
Products from blast furnaces and steel mills	-827	-0.3	-234	-0.3	265	2.6	-5	-0.1

See footnotes at end of table.

Table 2-2—Continued
Economic effects of simultaneous liberalization, by sector, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Rest of the economy								
Agriculture, forestry, and fisheries	-1,658	-0.1	-424	-0.1	-53	-0.4	304	0.9
Construction	1,179	([4])	113	([4])	([5])	([5])	([5])	([5])
Durable manufacturing	12,870	0.1	2,248	0.1	-638	-0.2	846	0.3
Finance, insurance, and real estate	5,262	0.1	1,003	0.1	-22	-0.2	69	0.3
Mining	500	0.1	138	0.1	-34	-0.1	36	0.4
Nondurable manufacturing	3,198	0.1	614	0.1	-220	-0.3	263	0.3
Services, other	31,609	0.1	2,720	0.1	-95	-0.2	371	0.3
Transportation, communications, and utilities	4,647	0.1	824	0.1	-126	-0.2	199	0.4
Wholesale and retail trade	8,978	0.1	560	([4])	([5])	([5])	([5])	([5])

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

imports of thread mill products is accompanied by a strong decline in production and employment because the apparel sector, an important downstream purchaser of thread mill output, declines significantly when all import barriers are removed. Similarly, the decline in domestic apparel, the most important purchaser of lace and knit goods, combines with a large tariff and quota liberalization to significantly reduce domestic economic activity in that sector.

The simultaneous removal of all significant import restraints generally reduces the prices paid for imported MFA goods by more than 10 percent. This also causes domestic producers to lower prices as they adapt to the increased price competition of imports. The general effect of price reductions in the MFA sectors is a 0.9 percent increase in aggregate consumption.[10] Consumer prices fall most in the luggage (-16 percent), apparel (-12 percent), and women's handbags and purses (-11 percent) sectors, and these correspond to sectors with the largest increases in consumption. In the remainder of the MFA sectors, price reductions are generally less than 4 percent. While these price reductions adversely affect producers in the MFA sectors, they simultaneously benefit consumers by increasing the purchasing power of their incomes.

Agricultural products are the second most-affected group in terms of the total effects. Agricultural

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[10] The USITC CGE model calculates sector-specific price changes faced by consumers as a composite of the import and domestic price shifts.

products have tariff equivalents generally exceeding 20 percent (column 2 in table 2-1), which makes the impact of their removal relatively significant. Sugar, dry/condensed milk products, cheese, and cream exhibit the largest percentage increases in imports among all sectors in the study, reflecting the high levels of protection that are being removed. The employment, output, and export shifts in these four sectors are negative and significant in percentage terms. With the exception of the butter sector, the remaining agricultural products show only minor percentage changes in these variables.

The sugar-containing products, meat, and cotton sectors illustrate the indirect effects of liberalization on production and trade. Meat and cotton have declining domestic production, but exports increase when all significant import relief is eliminated. The production of sugar-containing products increases as the import restraints are relaxed, and exports expand. The increase in exports occurs because these sectors become more competitive internationally as the dollar depreciates, but also because input prices decline as upstream sectors are also liberalized. This is especially true of the sugar-containing products that have an important upstream linkage with sugar.

In aggregate absorption, the large increases in imports are generally offset by reductions in domestic production. This allows domestic demand to remain roughly constant. Employment in the previously protected agricultural sectors is estimated to fall by 3,708 full-time equivalent workers and production

declines by an estimated $1.72 billion, which represents an average of 0.8 percent in those sectors. Individually, sugar experiences the largest changes, as production and employment fall by 6.6 percent and imports increase by 72.0 percent. This follows the elimination of a quota that roughly doubles the price of imported sugar.

In the high-tariff sectors, except for rubber and plastic footwear, all sectors experience a decrease in domestic production and employment. All sectors show increases in imports, but the direction of export changes vary by sector. Sectors with the largest reductions in output and employment are china tableware (-6.7 percent), ceramic wall and floor tile (-4.4 percent), and leather gloves and mittens (-4.3 percent). Sectors with the largest increases in imports are frozen fruit, fruit juices and vegetables (13.6 percent), leather gloves and mittens (11.7 percent), ceramic wall and floor tile (9.5 percent), and china tableware (9.4 percent).

Import liberalization generally reduces import prices by 5 to 14 percent in the high-tariff sectors. However, when combined with the prices of domestically produced goods, the most significant changes in aggregate prices faced by consumers occur in rubber and plastic footwear (-12 percent), nonrubber footwear (-5.5 percent), china tableware (-5.4 percent), leather gloves (-5.4 percent), and ceramic floor and wall tile (-4.9 percent). The remaining sectors experience less than a 3 percent price drop.

In the case of motor vehicles, combined removal of the MFN tariffs and VER leads to a decline of 2,098 full-time equivalent jobs and a reduction of 0.4 percent in domestic output. Import prices fall by 1.8 percent which translates into a 0.9 percent decline in the prices faced by U.S. consumers. The effects of lower import prices are illustrated by the 1.4 percent increase in imports; however, exports expand by $36 million, fueled by a number of factors including a weaker dollar and lower input prices. In particular, auto producers take advantage of lower prices for blast furnace and steel mill products and products from several of the MFA sectors to increase their competitiveness.

The maritime-transport sector is estimated to experience increases in imports, exports, output, and employment.[11] Removal of restrictions on foreign-owned suppliers providing shipping services

between U.S. ports will decrease output and employment in deep-water maritime transportation, but related services expand enough to counter these negative effects. Overall, removal of the Jones Act restrictions increase imports of foreign-supplied deep-water transportation by $848 million, but total domestic output in the sector is expected to increase by $861 million. This yields an estimated increase in employment of 1,590 full-time equivalent positions and a 4.7-percent increase in exports of services in the water transportation sector. The domestic output and employment expansions result from a boost in total shipping activity which positively affects the numerous related service providers in the industry.

Rest of the U.S. Economy

Table 2-2 also highlights nine aggregate sectors that represent broad industries in the rest of the U.S. economy.[12] Trade effects in these sectors are explained primarily through movements in aggregate variables such as the real exchange rate depreciation and changes in the demand and availability of capital and labor resources.[13] Depreciation of the real exchange rate raises import prices slightly in dollar terms. The depreciation also increases the dollar price of exports slightly, because it increases the foreign demand for those goods. This tends to decrease imports and increase the incentive for domestic producers to export.[14] The effect of liberalization on the rest of the economy is illustrated by the reductions in imports in the aggregate sectors and similarly, the increase in exports in the aggregate sectors. The agriculture, forestry, and fisheries sector posts the largest percentage export gain at 0.9 percent.

Unlike the majority of focus sectors, the rest of the economy generally experiences output gains due to lower input prices and increased demand from both domestic and export sources. Employment gains are also found in all aggregate categories except agriculture, forestry, and fisheries. This sector has a

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[11] The changes reported here combine the portion of maritime transportation that is protected by the Jones Act as well as the remaining water transportation activities including shipping services.

[12] These nine "rest of the economy" sectors comprise approximately 94 percent of total U.S. output.

[13] A third important factor is that the current account deficit is assumed to remain constant. Therefore, increases in imports that occur as a result of lower import barriers must be paid for with lower imports in other sectors and/or higher exports.

[14] As stated earlier, the change in relative prices increases the share of total production that is exported. However, if sectors contract as a result of liberalization, total exports may rise or fall depending on the relative magnitudes of these two influences.

0.1 percent reduction in output and employment as the significant import restrictions are lifted from several final goods that use agricultural output in upstream and downstream capacities.

The value of aggregate output and net exports are estimated to increase by $7.8 and $2.1 billion, respectively in the nine aggregate sectors, illustrating an indirect impact of significant import barriers on the remainder of the U.S. economy. Employment in the aggregate sectors is estimated to increase by 66,584 full-time equivalent positions. As the previously protected sectors lose import relief and become smaller, this releases labor and capital that is used in the rest of the economy. Services and durable manufacturing have the largest employment gains, accounting for increases of 31,609 and 12,870 full-time equivalent workers, respectively.

Effects of Uruguay Round Implementation

This section describes estimates of the effects of a set of first-year changes in import barriers that took effect (in 1995) as a result of the URA. Trade liberalization that will occur as a result of the URA will occur over time and will take the form of reductions in MFN tariffs and reductions in the equivalent import quantity restrictions of agricultural and MFA products.[15] The rate by which import restraints will be reduced varies by product, but the first year's commitments are generally small relative to the case of complete liberalization.

This report focuses on the impact of significant U.S. import restraints, so the analysis in this section addresses only the changes in import barriers that are identified in this report as significant and are also affected by URA committments.[16] However, although the import quantity restrictions associated with the MFA are subject to change, these changes are not

included in the present analysis because product categories and country-specific restrictions underwent substantial modifications between 1993 and 1995.[17] These complexities precluded calculation of the changes in tariff equivalents for the MFA quantity restrictions and therefore precluded a CGE analysis of this component of the URA.

Annual production, trade, and employment data do not yet exist for 1995, which eliminates the possibility of examining the effects of URA implementation in the context of the economy as it exists in 1995. Instead, beginning with the level of import protection estimated in 1993 and the economic structure in place in 1993, the analysis in this section relaxes the significant barriers as required of 1995 URA implementation to estimate the changes in production, employment, imports, exports, and economic welfare that would result. Most of the sectoral effects are small relative to complete liberalization and have impacts of less that 0.1 percent on production, employment and trade. The estimated net welfare effect of reducing tariffs and agricultural quantity restraints to the 1995 URA commitment levels is a net increase of $321 million. This represents 5.3 percent of the net welfare gains that are expected from a complete liberalization of these same barriers.

Sectors that are most affected by the first year of URA implementation are those with changes in import quotas during the first year.[18] Because tariff liberalizations will be implemented over a 10-year period, the single year changes are generally less than one-half percent. Notable exceptions are the tariff reductions for coated fabrics (-1.5 percentage points), ceramic wall and floor tile (-1.0 percentage point) and china tableware (-1.0 percentage point).

As in the earlier liberalization analysis, production, employment and exports generally decrease in the sectors that lose import protection as a result of the URA agreement. These sectors also experience increases in imports as consumers substitute less expensive alternatives. Domestic production in the meat sector is estimated to decline

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[15] Quotas on agricultural and MFA products are subject to 'tariffication' which replace the quotas with tariffs that generally yield the same import quantities as the average of imports over the years 1986-88. After converting quantity restraints to bound tariff rates, these rates are then subject to periodic reductions over time as specified in the Agreement. The analysis in this section examines the changes in equivalent tariffs required of 1995 implementation of the URA.

[16] Some tariffs within the nine sectors that represent the rest of the economy will also change as a result of the URA, but these are not included in the analysis in this section.

[17] For comparative purposes, the complete liberalization experiment in the previous section was reestimated to exclude MFA quota liberalization and the elimination of the automobile VER. The effects of completely eliminating tariffs and quotas in the agricultural sectors and completely eliminating tariffs in the MFA and high-tariff sectors is a net welfare gain to consumers of $6.0 billion.

[18] These include the dairy products and the meat sectors. The auto VER expired in 1993, so it is not part of the liberalization associated with the URA.

by $137 million, followed by reductions of $57 million in dry/condensed milk products, and $55 million in the household audio and video equipment sector. The largest shifts in employment also occur in the meat, dry/condensed milk products, auto, and household audio and video sectors, with reductions of 312, 131, 118, and 116 full-time equivalent workers, respectively.

The sectors that experience the largest increases in imports, also have the largest reductions in domestic production. Imports grow most in the meat sector ($143 million), followed by dry/condensed milk products ($62 million), household audio and video equipment ($56 million) and the motor vehicle sector ($54 million). The remaining sectors generally experience increases of less than $30 million.

In general, the nine sectors that represent the rest of the U.S. economy experience results that are similar to the case when all import restraints are liberalized. The consistency of these effects is also indicated by the fact that the broad agricultural products sector is estimated to decline with URA liberalization, while the remaining eight sectors expand. Because the changes in import barriers are significantly smaller in the first year of URA implementation as compared to the analysis of complete liberalization, the magnitudes of these effects are smaller as well. The nine aggregate sectors absorb much of the labor and capital that is released from the industries that face liberalization, leading to increases in employment, output and exports in the rest of the economy. Imports are generally replaced by domestic production in the rest of the economy, partially due to the exchange rate depreciation and partly because of the increased availability of capital and labor that are released from the formerly protected sectors.

CHAPTER 3
Manufacturing

This chapter provides analyses of the effects of U.S. import restraints on the following sectors: textiles and apparel; automobiles; and machine tools. The sectoral analyses include a description of the specific U.S. border measures under evaluation, a review of relevant literature, a description of the modeling simulations, and an evaluation of model results.

Textiles and Apparel

Introduction

In 1993, U.S. imports of textiles and apparel were largely governed by bilateral agreements under the Arrangement Regarding International Trade in Textiles, more generally known as the Multifiber Arrangement (MFA). The United States had bilateral agreements that specified quantitative limits on imports of textiles and apparel from 42 countries and imposed unilateral restrictions on imports from three countries in 1993 (table 3-1).[1] U.S. imports under the MFA amounted to $36 billion and accounted for approximately 79 percent of total imports of textiles and apparel in that year. Although there was considerable variance in the scope and restrictiveness of these bilateral agreements, most of the major suppliers of these goods to the United States were subject to binding (i.e., restrictive) quotas.

The trade-weighted average ad valorem tariffs on U.S. imports of textiles and apparel were 10.3 and 15.0 percent, respectively in 1993. These goods qualified for preferential duty treatment under free-trade agreements negotiated with Canada and Israel. In addition, duty-free treatment under the Caribbean Basin Economic Recovery Act (CBERA) is

accorded some textiles and apparel, namely those chiefly of silk and noncotton vegetable fibers. Finally, imports from various countries received reduced duty treatment under heading 9802.00.80 of the *Harmonized Tariff Schedule of the United States*. Certain countries included in the Caribbean Basin Initiative (CBI) and Mexico also benefited from preferential quota access for many of the imports entering the United States under this heading.[2]

In 1993, total U.S. imports of textiles and apparel amounted to $45.8 billion, resulting in an import/shipments ratio of 32 percent. U.S. exports totaled $10.5 billion and accounted for 7.3 percent of U.S. shipments (table 3-2).

Although U.S. textile and apparel imports were affected by a significant degree of protection in 1993, provisions contained in recent trade agreements provide for the elimination of quantitative restrictions and the gradual lowering of tariffs on virtually all of these products. The following sections provide a brief discussion of provisions contained in the North American Free Trade Agreement (NAFTA) and the Agreement on Textiles and Clothing (ATC) negotiated in the Uruguay Round of the GATT.

NAFTA

The U.S. bilateral agreement under the MFA with Mexico expired at the end of 1993. Under NAFTA, which entered into force on January 1, 1994, the United States immediately eliminated most quotas on U.S. imports of textiles and apparel from Mexico that comply with NAFTA origin rules.[3] The remaining

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[1] Quotas established under the MFA are product-specific. In addition, group or aggregate limits encompassing more than one quota category are frequently established. The scope of product coverage and the extent to which specific quotas are binding vary by country.

[2] Preferential access was limited to apparel and other articles made from fabric that was formed and cut in the United States.

[3] NAFTA includes a "yarn-forward" rule of origin that applies to most textiles and apparel. This rule specifies that these products must be made or assembled from fabric formed in North America from yarn spun in North America. Textiles and apparel that do not meet this rule generally are not eligible for preferential duty treatment and are, in the case of Mexican products, subject to quotas. NAFTA also provides tariff preference levels

Table 3-1
Countries with which the United States had textile and apparel quotas in 1993: U.S. general imports under the MFA in 1993

(1,000 dollars)

Country	Imports
Members of the WTO as of July 1995	
Bahrain	49,152
Bangladesh	765,818
Brazil	289,312
Colombia	347,436
Costa Rica	658,789
Czech Republic	43,655
Dominican Republic	1,457,653
Egypt	195,941
El Salvador	268,138
Hong Kong	3,957,400
Hungary	62,866
India	1,285,493
Indonesia	1,111,439
Jamaica	390,919
Macao	483,381
Malaysia	678,468
Mauritius	162,299
Mexico	1,372,050
Myanmar (Burma)[1]	29,752
Pakistan	651,606
Philippines	1,337,104
Poland	74,573
Romania	15,337
Singapore	522,184
Slovakia	16,407
South Korea	2,476,923
Sri Lanka	840,222
Thailand	1,131,108
Turkey	472,175
Uruguay	34,342
Non-WTO members	
Bulgaria	34,934
China	4,765,884
Fiji	48,955
Guatemala	565,194
Haiti	95,686
Laos	7,776
Lebanon[1]	1,420
Lesotho	55,030
Macedonia[1]	46,450
Nepal	83,307
Oman	77,682
Panama	41,702
Qatar	48,366
Taiwan	2,860,979
United Arab Emirates	174,225

[1] The restraint level(s) for this country during 1993 were imposed unilaterally by the United States.

Sources: Trade data compiled from official statistics of the U.S. Department of Commerce, Bureau of the Census. Information on quota status from the U.S. Department of Commerce, International Trade Administration, Office of Textiles and Apparel.

Table 3-2
Textiles and apparel: Summary data, 1993

USITC sector[1]	Employment	Shipments	Imports	Exports
	1,000 workers	*———————— Million dollars ————————*		
Textiles:				
Broadwoven fabric mills	233.9	22,747	3,470	1,680
Narrow fabric mills	22.5	1,330	210	326
Yarn mills and textile finishing	104.3	12,156	309	154
Thread mills	6.8	887	97	102
Floor coverings	59.7	9,948	929	738
Felt and textile goods, n.e.c.	19.5	1,987	417	370
Lace and knit fabric goods	49.1	7,661	248	237
Coated fabrics, not rubberized	8.8	1,652	380	703
Tire cord and fabric	6.7	782	28	167
Cordage and twine	7.0	613	129	50
Nonwoven fabric	9.4	3,584	122	112
Total	527.7	63,347	6,339	4,639
Apparel and fabricated textile products:				
Women's hosiery, except socks	29.3	1,697	184	126
Hosiery n.e.c.	40.0	2,561	231	105
Apparel made from purchased materials	864.1	56,861	32,885	4,183
Curtains and draperies	21.1	1,237	94	26
House furnishings n.e.c.	52.9	5,846	1,336	307
Textile bags	10.6	705	50	30
Canvas and related products	18.4	1,247	128	26
Pleating, stitching, trimmings, and Schiffli embroidery	72.0	7,301	129	26
Fabricated textile products, n.e.c.	29.3	3,366	1,780	906
Luggage	10.7	804	1,657	132
Women's handbags and purses	4.9	366	998	41
Total	1,153.3	81,991	39,472	5,908
Textiles and apparel	1,681.0	145,338	45,811	10,547

[1] Data associated with knit outerwear mills (SIC 2253), knit underwear mills (SIC 2254), and knitting mills n.e.c. (SIC 2259) are reallocated to other textile and apparel sectors in accordance with the 1987 input-output table of the Bureau of Labor Statistics.

Source: Compiled from official data of the U.S. Department of Labor and U.S. Department of Commerce.

quotas apply to Mexican products that do not meet the NAFTA origin rules. These quotas are scheduled to be removed by the year 2004.

In 1994, less than 1 percent of the import volume from Mexico entered under quota. In addition, approximately 71 percent of the value of imports of textiles and apparel entered duty-free under *HTS* subheading 9802.00.90, which provides for such goods from Mexico that are assembled from fabric "formed and cut" in the United States.

3—*Continued*

(TPLs) that allow a limited number of Mexican and Canadian textile and apparel products that do not comply with NAFTA rules of origin entry into the United States under preferential tariff rates. The TPLs are the equivalent of tariff-rate quotas.

ATC

The ATC entered into force on January 1, 1995, as part of the Uruguay Round agreements. The ATC replaced the MFA and provides for the integration of textiles and apparel into the World Trade Organization (WTO) over ten years. The ATC provides for the phaseout of MFA quotas and the acceleration of quota growth rates for products not yet integrated into the WTO. Under the ATC, the United States will integrate a specified percentage of textile and apparel imports in each of three stages and integrate the remaining products by January 1, 2005. Once integrated, quotas can be applied only under regular WTO safeguard procedures. In addition, quotas remaining during all or a portion of the 10-year transition period will be subject to annual growth rates

that are greater than those prescribed under previous bilateral agreements.[4]

The President is authorized to impose quotas on imports from countries that currently are not WTO members under section 204 of the Agricultural Act of 1956.[5] The United States is not obligated to phase out quotas on imports from non-WTO members.

Results of Previous Research

The scope and restrictiveness of the quantitative measures imposed under the MFA by the United States and most other OECD countries have been the subject of considerable research.[6] The Commission (1993), using the USITC CGE model, estimated that the elimination of MFA quotas by the United States would have resulted in a gain in net welfare of $9.6 to $10.8 billion in 1991.[7] Hufbauer and Elliott (1994) estimated that the elimination of the MFA quotas and tariffs would have generated an increase in net welfare of $8.6 billion in 1990.[8] The results of these analyses vary because of differences in the type of model used, the time period under review, and the scope of the analysis. In particular, Hufbauer and Elliott's estimates are based on a computable partial equilibrium model that does not take into account upstream and downstream effects that result from the elimination of the MFA.

Economic Effects of Removing Import Restraints in Textiles and Apparel

As discussed in chapter 1, the USITC computable general equilibrium (CGE) model is used to evaluate the effects of eliminating tariffs and quotas applied to U.S. imports of textile and apparel products. The

USITC database is disaggregated to include 22 sectors that are directly affected by the MFA, 3 upstream sectors, 1 downstream composite sector, and 9 aggregate sectors comprising the rest of the U.S. economy.[9] The economic analysis discussed below was structured along the same lines as the analysis covering the MFA sectors that was conducted by the Commission in 1993. The analysis consists of two cases. The first case estimates the effect of removing only the MFA quotas, and the second estimates the effects of eliminating quotas as well as tariffs on imports of textile and apparel products.

Model Specification

As noted in chapter 2, MFA quotas control the quantity of imports entering the United States on a product (quota category) basis.[10] In some instances, the quota applies only to a portion of the products that fall within the quota category. In general, when U.S. imports of products covered by a quota reach the quantity limit specified by the agreement, no additional products can enter the United States. However, any systematic analysis of quota utilization is difficult because the bilateral agreements often allow for flexibility through "swing," "carry-forward," and "carry-over" provisions.

Quotas are binding when the quota utilization rate is high enough to effectively inhibit foreign manufacturers from exporting additional production to the United States. Although recent studies have assumed that quotas are binding when utilization rates reach 90 percent or greater,[11] the level at which the quota is assumed to be binding continues to be debated, because it is often difficult to assess whether foreign exporters have sufficient information

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[4] For additional information, see USITC, *Potential Impact on the U.S. Economy and Industries of the GATT Uruguay Round Agreements*, USITC publication 2790, June 1994, pp. IV-5—IV-7. See also, USITC, *The Year in Trade 1993: Operation of the Trade Agreements Program*, USITC publication 2769, June 1994, pp. 9-11.

[5] 7 U.S.C. 1854.

[6] The results of earlier studies that focus on the United States are reviewed in USITC, *The Economic Effects of Significant Import Restraints*, USITC publication 2699, November 1993, pp. 12-14.

[7] The removal of tariffs and quotas generated an estimated economywide gain of $15.3 to $16.4 billion. See USITC, *Import Restraints* (1993), pp. 15-16.

[8] Gary C. Hufbauer and Kimberly A. Elliott, *Measuring the Costs of Protection in the United States*, (Washington DC: Institute for International Economics, 1994).

[9] The sectors correspond to six-digit Bureau of Economic Analysis (BEA) input-output groups that are aggregated from four-digit SIC categories. Appendix D provides a concordance between the USITC focus sectors, the BEA sectors, and the corresponding SIC industries. Although wool is another upstream product that is relatively important to certain textile sectors, wool production is not treated as a separate upstream sector because it is part of a larger sector and cannot be disaggregated. Thus, it is included in the aggregated sector - agriculture, forestry, and fisheries. The composite downstream sector includes industries that are significant users of one or more of the focus sectors. Appendix D also includes those industries that comprise the composite downstream sector.

[10] As discussed above, many bilateral agreements also include aggregate or group quotas.

[11] See, for example, Refik Erzan, Junichi Goto, and Paula Holmes, "Effects of the Multi-Fibre Arrangement on Developing Countries' Trade: An Empirical Investigation," in Carl Hamilton, ed. *Textiles Trade and*

regarding quota utilization levels.[12] Thus, although utilization rates for a particular country's exports may be less than 100 percent, suppliers, as a result of imperfect information, may be unwilling to commit additional resources to the production of goods for export to the U.S. market.

For the purpose of providing a range of estimates in the following analysis, estimated tariff equivalents are based on the assumption that quotas were effectively binding when utilization rates reached either 80 or 90 percent.[13] The assumption that quotas are binding when utilization rates reach 80 percent provides the upper bound for the estimated tariff equivalents, inasmuch as more categories are classified as binding at the 80-percent level and therefore cover a higher percentage of imports.[14,15]

Tariff equivalents are estimated for the MFA quotas using the quota auction method described in chapter 7. The estimated tariff equivalents used in this analysis were calculated taking into account the extent to which U.S. imports were covered by quotas (on a country-by-country basis) and whether or not the quotas were binding.[16] The estimated tariff equivalents and trade-weighted average tariffs for each sector are shown in table 3-3.[17] As in the Commission's previous study, the degree of protection provided by estimated tariff equivalents and trade-weighted tariffs continues to vary across the 22 sectors. These sectoral variations influence the estimated effects of trade liberalization discussed below.

The estimated economic effects for two cases are examined below: (1) removal of MFA quotas and (2) removal of MFA quotas and tariffs. The magnitude and distribution of the effects depend on various factors. For example, the parameter that specifies the extent to which quota rents accrue abroad depends on the extent to which U.S. importers have market power. If these firms have limited market power (i.e., they cannot bargain for the rents provided), then it is likely that foreign exporters would capture 100 percent of the quota rents. However, recent empirical research suggests that concentration of domestic firms in the U.S. import market may be sufficient to allow U.S. importers to capture a portion of the quota rents generated by the MFA.[18]

Based on this research, the following analysis specifies that 80 percent of the quota rents accrue to foreign exporters.[19,20]

[11]—Continued
the Developing Countries: Eliminating the Multi-Fibre Arrangement in the 1990s (Washington, DC: The World Bank, 1990).

[12] See, for example, Rajiv Kumar and Sri Ram Khanna, "India, The Multi-Fibre Arrangement and the Uruguay Round," in Hamilton, ed. Textiles Trade and the Developing Countries, pp. 182-214.

[13] The same assumption was made in USITC, Import Restraints, (1993).

[14] Imports that are not bound by quotas are assigned a tariff equivalent of zero. Since the tariff equivalents used in the USITC CGE model are trade-weighted averages, nonrestricted imports lower the average tariff equivalents.

[15] The assumption that quotas are binding at 90 percent provides the lower bound estimate.

[16] Tariff equivalents for U.S. imports from Hong Kong were estimated on the basis of average weekly Hong Kong quota prices paid by brokers. The weekly prices were obtained from International Business and Economic Research Corporation. Other countries restricted by MFA quotas generally do not allocate quota rights by means of public auctions. Consequently, Commission staff estimated export prices for other countries on the basis of the estimated Hong Kong export prices (after adjusting the Hong Kong prices for labor cost and productivity differences). The sources for information regarding labor costs and productivity include: UNIDO, Handbook of Industrial Statistics, 1992; U.S. Department of Labor, Bureau of Labor Statistics; and Werner International Management Consultants, "Hourly Labor Costs for the Apparel Industry" for 1993.

[17] In general, the tariff equivalents shown in table 3.3 are somewhat higher than those calculated by the Commission for 1991 imports. To some extent, these differences reflect changes in U.S. demand for products from a number of the supplier countries. In 1991, exports from many countries were restricted on an individual quota category basis, but not by restrictions imposed by group quotas; in 1993, these aggregate or group limits were often restrictive at either the 80 or 90 percent fill rate level. Moreover, although imports from the CBI countries that entered under guaranteed access levels (GALs) continued to account for a significant percentage of these countries' total exports of textiles and apparel, a number of these countries exported an increasing amount of textiles and apparel that were subject to restrictive quotas.

[18] See Geoffrey J. Bannister, "Rent Sharing in the Multi-Fibre Arrangement: The Case of Mexico," Weltwirtschaftliches Archiv 130, 4, (1994), 800-827, and Refik Erzan, Kala Krishna, and Ling Hui Tan, "Rent Sharing in the Multi-Fibre Arrangement: Theory and Evidence from U.S. Apparel Imports from Hong Kong," (Washington, DC: The World Bank, 1991).

[19] Had the specification been made that 100 percent of the quota rents accrued abroad, corresponding estimates of welfare gains from the removal of quotas would have been higher.

[20] The same assumption was made in USITC, Import Restraints (1993). See also, Kenneth A. Reinert, "Textile and Apparel Production in the United States: A General Equilibrium Analysis," The World Economy, 16, No. 3, May 1993, pp. 359-76.

Table 3-3
Estimated ad valorem tariff equivalents for MFA quotas and trade-weighted, average MFN tariffs, by USITC sectors, 1993

(Percent)

Sector	Ad valorem tariff equivalents		Average MFN tariff rate[3]
	Lower[1]	Upper[2]	
Textiles:			
Broadwoven fabric mills	9.2	9.5	12.8
Narrow fabric mills	3.1	3.3	7.8
Yarn mills and textile finishing	2.3	3.1	9.1
Thread mills	2.2	2.2	9.7
Floor coverings	9.2	9.3	5.8
Felt and textile goods, n.e.c.	0.1	0.1	4.3
Lace and knit fabric goods	5.8	5.9	13.1
Coated fabrics, not rubberized	0.9	1.0	9.8
Tire cord and fabric	2.3	2.4	1.6
Cordage and twine	1.2	1.2	4.6
Nonwoven fabric	0.2	0.2	3.2
Apparel and fabricated textile products:			
Women's hosiery, except socks	0.1	2.3	16.0
Hosiery, n.e.c.	0.3	2.4	6.9
Apparel made from purchased materials	16.0	19.9	15.0
Curtains and draperies	12.0	12.1	11.4
House furnishings, n.e.c.	13.7	13.9	8.0
Textile bags	8.6	9.0	6.4
Canvas and related products	5.0	5.2	8.0
Pleating, stitching, trimmings, and Schiffli embroidery	5.0	7.6	9.6
Fabricated textile products, n.e.c.	0.6	0.6	3.2
Luggage	10.3	10.4	12.5
Women's handbags and purses	3.1	3.1	13.3

[1] Assumes that quotas are binding at a 90-percent utilization rate.
[2] Assumes that quotas are binding at an 80-percent utilization rate.
[3] Ad valorem equivalent.

Source: Estimated by the staff of the USITC.

Model Results

The overall effect of liberalizing the MFA quotas (case 1) generates an economywide welfare gain ranging from $7.7 to $9.2 billion in 1993. Under case 1, consumer prices decline across most of the MFA sectors. The luggage, apparel made from purchased materials (apparel), and women's handbags and purses (handbags) sectors realize the most significant price declines (7.5, 6.1, and 2.3 percent, respectively).[21] Overall, the elimination of MFA quotas generates an increase in the real gross domestic product (GDP) of approximately 0.1 percent ($5.3 to $6.4 billion).

When MFA quotas and the tariffs applied to the MFA products are eliminated simultaneously (case 2), the economywide gain in welfare ranges from $8.6 to $10.0 billion.[22] Price declines across the MFA

sectors are more pronounced under this scenario, with luggage, apparel, and handbags experiencing the largest declines (15.6, 11.3, and 11.1 percent, respectively). Overall, the elimination of tariffs and quotas results in an increase in real GDP of under 0.1 percent ($3.3 to $4.3 billion).

Under case 1, the removal of the MFA quotas results in a negligible change in the U.S. real exchange rate.[23] Under case 2, the simultaneous removal of tariffs and quotas results in a slight depreciation of the real exchange rate. In both cases, overall labor and capital income increase as a

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[21] Based on the lower bound estimates. The price declines resulting from the upper bound scenario were larger.

[22] Although the welfare gains generated by the removal of the MFA quotas that were estimated in this study are similar in magnitude to those estimated in the

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[22]—Continued

USITC (1993) study, the welfare gains arising from the simultaneous removal of tariffs and quotas differ somewhat. This difference is a function of adjustments that were made to the way in which factors of production were represented in the underlying database used in the current study.

[23] As discussed earlier, the exchange rate is the measure of the relative prices of tradeable to nontradeable goods.

result of MFA liberalization. The decline in the wage-rental ratio indicates that the returns to labor have increased at a slower rate than those to capital.

For both cases, the effects of removing quotas reflect the extent to which the sectors are subject to quota-restricted imports. In general, sectors with relatively high estimated tariff equivalents, such as apparel, luggage, and broadwoven fabric mills, are more adversely affected in terms of employment and production. Similarly, sectors with high ad valorem tariffs such as lace and knit fabric goods are more adversely affected by tariff removal (case 2). Moreover, the impact of trade liberalization on the textile mill sectors is compounded by declines in production taking place in their downstream industries (for instance, apparel). Conversely, producers in the downstream sectors, such as apparel, benefit from liberalization of trade in upstream sectors that somewhat offsets increased import competition.[24] The detailed results for both cases are presented below.

Case 1: Removal of MFA Quotas

Tables 3-4 and 3-5 show the results of MFA quota elimination on domestic employment, output, and trade in absolute and percentage terms, respectively for each of the MFA sectors, as well as upstream, downstream and aggregate sectors. All sectors directly affected by quota liberalization show declines in employment, with apparel and broadwoven fabric mills showing the greatest absolute declines (over 17,600 to 21,500 and 4,600 to 5,200 full-time equivalents (FTEs), respectively). In percentage terms, the luggage sector experiences the largest decline (4 percent) in FTEs. Production declines also occur across most of the sectors, with luggage and apparel experiencing the largest percentage decreases (4 percent and approximately 3 percent, respectively). Generally, imports increase and exports decline across the MFA sectors. However, for a number of sectors,

the changes amount to less than $1 million per sector. Moreover, the ratio of exports to production increases for a number of these sectors.

According to the model results, all of the upstream sectors show declines in employment and production, resulting, in part, from declines in domestic production in the various liberalized textile sectors that use these inputs. However, in percentage terms, the changes are relatively small (no more than 1.2 percent from the base amount). Although the downstream composite sector experiences a negligible improvement in employment and production in percentage terms, the gains are significant given the size of this sector relative to the overall economy.[25]

Case 2: Removal of Tariffs and MFA Quotas

Tables 3-6 and 3-7 show the effects of eliminating both tariffs and quotas on the sectors directly affected by the MFA in 1993. With the exception of tire cord and fabric and handbags, all of the sectors directly affected by the MFA show declines in employment and production.[26] Apparel and broadwoven fabric mills experience the largest estimated declines, with losses of over 32,400 and 9,700 FTEs, respectively. In addition, imports increase in all of the sectors, with the largest increase, in absolute and percentage terms, occurring in the apparel sector ($7.1 billion or 18.3 percent under the lower bound to $8.0 billion or 20.7 percent under the upper bound scenario). Exports generally decline across most of the sectors; however, the ratio of exports to production for most of the MFA sectors increases.[27]

As in case 1, the sectors most affected by trade liberalization tend to be those protected by relatively high tariff equivalents and/or ad valorem tariffs. In terms of the upper bound estimates, the sectors

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[24] For example, apparel is a significant downstream user of broadwoven fabric (which, in turn, uses fibers and yarns). Under both cases, producers of thread, yarn, and fabric face greater competition as imports increase. Moreover, since apparel producers also have to contend with greater import competition, their production and consequently their demand for inputs such as fabric decreases. However, declining input prices and macroeconomic changes (such as an increase in real income) generated by MFA liberalization mitigate the negative impact on the apparel sector. If quota and tariff elimination were limited to the apparel sector alone, the decline in employment and production would amount to approximately 5.0 percent, rather than the 4.8-percent lower bound estimate generated under case 2.

[25] The composite sector includes both manufacturing and service sector industries such as upholstered furniture; tires and inner tubes; motor vehicles; surgical supplies; new residential, industrial, and commercial structures; and hospitals.

[26] In percentage terms, changes in employment in the tire cord and fabric and handbags sectors amount to 0.1 percent or less. Moreover, changes in output are negligible.

[27] The tire cord and fabric, curtains and draperies, textile bags, canvas and related products, and fabricated textile products sectors all register small gains in exports under this scenario. The only sector that registers a significant increase in exports is handbags (15.3 percent). Export growth in these sectors occurs, in part, as a result of the depreciation of the real exchange rate.

Table 3-4
Case 1: Economic effects of quota liberalization in MFA sector, value changes, 1993

Sector	Employment Lower	Employment Upper	Output Lower	Output Upper	Imports Lower	Imports Upper	Exports Lower	Exports Upper
	— (FTE)[1] —				(Million dollars)			
Liberalized sectors:								
Textiles:								
Broadwoven fabric mills	-4,685	-5,167	-631	-696	228	232	-51	-56
Narrow fabric mills	-149	-171	-13	-15	4	4	-3	-3
Yarn mills and textile finishing	-1,630	-1,905	-220	-257	4	6	-3	-3
Thread mills	-127	-151	-19	-23	(2)	(2)	-2	-2
Floor coverings	-314	-313	-54	-54	69	69	-2	-3
Felt and textile goods, n.e.c.	-105	-118	-12	-13	-1	-2	-2	-3
Lace and knit fabric goods	-1,260	-1,508	-238	-284	14	13	-8	-9
Coated fabrics, not rubberized	-36	-43	-7	-8	1	1	-3	-4
Tire cord and fabric	(3)	(3)	(2)	(2)	(2)	(2)	(2)	(2)
Cordage and twine	-27	-27	-2	-2	1	1	(2)	(2)
Nonwoven fabric	-10	-11	-5	-5	(2)	(2)	(2)	(2)
Apparel and fabricated textile products:								
Women's hosiery, except socks	-20	-34	-2	-3	(2)	(2)	(2)	(2)
Hosiery, n.e.c.	-43	-81	-4	-7	(2)	3	(2)	(2)
Apparel made from purchased materials	-17,604	-21,464	-1,770	-2,158	3,532	4,375	-108	-132
Curtains and draperies	-15	-12	-2	-1	9	9	(2)	(2)
House furnishings, n.e.c.	-257	-256	-62	-62	124	126	-1	-1
Textile bags	-27	-29	-4	-4	4	4	(2)	(2)
Canvas and related products	-28	-29	-3	-3	5	5	(2)	(2)
Pleating, stitching, trimmings and Schiffli embroidery	-411	-510	-80	-99	5	9	(2)	(2)
Fabricated textile products, n.e.c.	-9	-8	-2	-2	4	4	(2)	(2)
Luggage	-407	-411	-29	-30	142	144	-7	-7
Women's handbags and purses	-1	-1	(2)	(2)	22	22	1	1
Upstream sectors:								
Cotton	-60	-69	-18	-20	(2)	(2)	-7	-8
Cellulosic manmade fibers	-90	-104	-27	-31	-2	-2	-1	-1
Noncellulosic manmade fibers	-362	-418	-178	-206	-10	-11	-28	-32
Downstream sector:								
Composite	5,042	5,934	570	669	121	147	-7	-10
Rest of the economy:								
Agriculture, forestry, and fisheries	-776	-938	-203	-245	4	4	-119	-143
Mining	70	83	-6	-7	13	15	-7	-9
Construction	146	174	15	17	(4)	(4)	(4)	(4)
Nondurable manufacturing	711	851	81	96	70	84	-49	-60
Durable manufacturing	-381	-503	-177	-222	213	256	-136	-166
Transportation, communications, and utilities	1,149	1,368	176	208	75	91	-50	-60
Wholesale and retail trade	7,551	9,000	506	602	(4)	(4)	(4)	(4)
Finance, insurance, and real estate	2,612	3,112	654	777	17	21	-12	-15
Other services	11,553	13,758	986	1,173	24	29	-28	-34

[1] Full-time equivalents.

[2] Change less than $500,000.

[3] Change less than 1 FTE.

[4] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Table 3-5
Case 1: Economic effects of quota liberalization in MFA sector, percentage changes, 1993
(Percent)

Sector	Employment Lower	Employment Upper	Output Lower	Output Upper	Imports Lower	Imports Upper	Exports Lower	Exports Upper
Liberalized sectors:								
Textiles:								
Broadwoven fabric mills	-1.6	-1.7	-1.6	-1.7	7.5	7.7	-1.4	-1.6
Narrow fabric mills	-0.6	-0.7	-0.6	-0.7	2.9	3.0	-0.6	-0.6
Yarn mills and textile finishing.	-1.2	-1.4	-1.2	-1.4	1.2	1.8	-1.1	-1.3
Thread mills	-1.5	-1.8	-1.5	-1.8	0.8	0.5	-1.4	-1.7
Floor coverings	-0.4	-0.4	-0.4	-0.4	7.9	8.0	-0.4	-0.4
Felt and textile goods, n.e.c ..	-0.4	-0.5	-0.4	-0.5	-0.3	-0.3	-0.5	-0.5
Lace and knit fabric goods ...	-2.1	-2.5	-2.1	-2.5	4.9	4.6	-2.1	-2.5
Coated fabrics, not rubberized	-0.3	-0.4	-0.3	-0.4	0.3	0.3	-0.3	-0.4
Tire cord and fabric	[1]	[1]	[1]	[1]	2.1	2.2	[1]	[1]
Cordage and twine	-0.3	-0.3	-0.3	-0.3	0.8	0.8	-0.3	-0.3
Nonwoven fabric	-0.1	-0.1	-0.1	-0.1	0.1	0.1	-0.1	-0.1
Apparel and fabricated textile products:								
Women's hosiery, except socks	[1]	-0.1	[1]	-0.1	0.1	1.9	-0.1	-0.1
Hosiery, n.e.c.	-0.1	-0.1	-0.1	-0.1	0.2	1.9	-0.1	-0.1
Apparel made from purchased materials	-2.6	-3.1	-2.6	-3.2	9.1	11.3	-2.5	-3.0
Curtains and draperies	-0.1	-0.1	-0.1	-0.1	7.4	7.5	0.1	0.1
House furnishings, n.e.c.	-0.8	-0.8	-0.8	-0.8	7.8	7.9	-0.6	-0.6
Textile bags	-0.3	-0.4	-0.3	-0.4	5.4	5.7	-0.2	-0.2
Canvas and related products .	-0.1	-0.1	-0.2	-0.2	3.2	3.3	[1]	[1]
Pleating, stitching, trimmings and Schiffli embroidery	-0.7	-0.9	-0.7	-0.9	3.5	5.7	-0.4	-0.6
Fabricated textile products, n.e.c	[1]	[1]	[1]	[1]	0.3	0.3	0.1	0.1
Luggage	-4.0	-4.0	-4.0	-4.0	6.3	6.4	-4.1	-4.2
Women's handbags and purses	[1]	[1]	[1]	[1]	1.8	1.8	2.7	2.7
Upstream sectors:								
Cotton	-0.6	-0.6	-0.6	-0.7	-0.8	-0.9	-0.4	-0.5
Cellulosic manmade fibers ...	-1.0	-1.2	-1.1	-1.2	-1.0	-1.1	-1.1	-1.2
Noncellulosic manmade fibers	-1.0	-1.2	-1.0	-1.2	-0.9	-1.1	-1.0	-1.2
Downstream sector:								
Composite	[1]	[1]	[1]	[1]	0.1	0.1	[1]	[1]
Rest of the economy:								
Agriculture, forestry, and fisheries	[1]	-0.1	-0.1	-0.1	[1]	[1]	-0.4	-0.4
Mining	[1]	[1]	[1]	[1]	[1]	[1]	-0.1	-0.1
Construction	[1]	[1]	[1]	[1]	[2]	[2]	[2]	[2]
Nondurable manufacturing ...	[1]	[1]	[1]	[1]	0.1	0.1	[1]	-0.1
Durable manufacturing	[1]	[1]	[1]	[1]	0.1	0.1	[1]	-0.1
Transportation, communications, and utilities	[1]	[1]	[1]	[1]	0.1	0.1	-0.1	-0.1
Wholesale and retail trade	[1]	0.1	[1]	[1]	[2]	[2]	[2]	[2]
Finance, insurance, and real estate	0.1	0.1	[1]	0.1	0.1	0.2	-0.1	-0.1
Other services	[1]	[1]	[1]	[1]	0.1	0.1	[1]	-0.1

[1] Change less than 0.05 percent.
[2] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Table 3-6
Case 2: Economic effects of quota and tariff liberalization in MFA sector, value changes, 1993
(Percent)

Sector	Employment Lower	Employment Upper	Output Lower	Output Upper	Imports Lower	Imports Upper	Exports Lower	Exports Upper
	— (FTE)[1] —		(Million dollars)					
Liberalized sectors:								
Textiles:								
Broadwoven fabric mills	-9,781	-10,234	-1,318	-1,380	567	571	-102	-107
Narrow fabric mills	-370	-391	-33	-35	15	15	-6	-6
Yarn mills and textile finishing .	-3,357	-3,617	-453	-488	31	33	-6	-6
Thread mills	-277	-300	-41	-45	7	7	-4	-5
Floor coverings	-488	-487	-85	-85	111	112	-3	-3
Felt and textile goods, n.e.c ..	-342	-355	-38	-40	10	10	-7	-7
Lace and knit fabric goods ...	-2,521	-2,754	-476	-520	53	52	-14	-16
Coated fabrics, not rubberized	-225	-232	-45	-46	22	22	-18	-19
Tire cord and fabric	3	3	(2)	(2)	(2)	(2)	(2)	(2)
Cordage and twine	-111	-112	-7	-7	5	5	(2)	(2)
Nonwoven fabric	-27	-28	-13	-14	3	3	(2)	(2)
Apparel and fabricated textile products:								
Women's hosiery, except socks	-136	-150	-11	-12	7	8	(2)	(2)
Hosiery, n.e.c.	-201	-238	-17	-20	7	9	(2)	(2)
Apparel made from purchased materials	-32,484	-36,110	-3,270	-3,634	7,070	8,001	-198	-220
Curtains and draperies	-28	-25	-3	-3	17	17	(2)	(2)
House furnishings, n.e.c.	-365	-364	-89	-89	197	199	(2)	(2)
Textile bags	-43	-45	-6	-6	6	6	(2)	(2)
Canvas and related products	-68	-68	-6	-6	11	12	(2)	(2)
Pleating, stitching, trimmings and Schiffli embroidery	-777	-871	-151	-169	17	21	(2)	(2)
Fabricated textile products, n.e.c	-82	-81	-14	-14	21	21	4	4
Luggage	-810	-814	-58	-58	320	322	-12	-13
Women's handbags and purses	4	4	(2)	(2)	113	113	6	6
Upstream sectors:								
Cotton	-69	-78	-21	-24	(2)	(2)	(2)	(2)
Cellulosic manmade fibers ...	-181	-194	-55	-59	-5	-5	-2	-3
Noncellulosic manmad fibers	-716	-768	-353	-379	-24	-25	-51	-55
Downstream sector:								
Composite	9,085	9,931	937	1,031	-288	-259	155	151
Rest of the economy:								
Agriculture, forestry, and fisheries	2,324	2,138	381	335	-10	-9	251	223
Mining	636	644	163	160	-10	-7	27	25
Construction	325	352	26	28	(3)	(3)	(3)	(3)
Nondurable manufacturing ...	3,042	3,159	547	558	-134	-119	184	171
Durable manufacturing	11,229	11,016	1,883	1,823	-396	-349	613	577
Transportation, communications, and utilities	3,764	3,957	605	634	-130	-113	201	189
Wholesale and retail trade	6,230	7,663	304	401	(3)	(3)	(3)	(3)
Finance, insurance, and real estate	2,716	3,206	359	482	-19	-16	48	45
Other services	14,100	16,242	1,009	1,192	-39	-34	162	154

[1] Full-time equivalents.
[2] Change less than $500,000.
[3] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Table 3-7

Case 2: Economic effects of quota and tariff liberalization in MFA sector, percentage changes, 1993

(Percent)

Sector	Employment Lower	Employment Upper	Output Lower	Output Upper	Imports Lower	Imports Upper	Exports Lower	Exports Upper
Liberalized sectors:								
Textiles:								
Broadwoven fabric mills	-3.3	-3.4	-3.3	-3.4	18.7	18.9	-2.9	-3.0
Narrow fabric mills	-1.4	-1.5	-1.4	-1.5	10.2	10.4	-1.3	-1.4
Yarn mills and textile finishing .	-2.5	-2.7	-2.5	-2.7	8.9	9.6	-2.3	-2.4
Thread mills	-3.2	-3.5	-3.2	-3.5	8.3	8.0	-2.9	-3.2
Floor coverings	-0.6	-0.6	-0.7	-0.7	12.8	12.9	-0.5	-0.5
Felt and textile goods, n.e.c ..	-1.4	-1.5	-1.5	-1.5	2.0	2.0	-1.4	-1.4
Lace and knit fabric goods ...	-4.2	-4.6	-4.2	-4.6	18.8	18.5	-3.9	-4.3
Coated fabrics, not rubberized	-2.0	-2.1	-2.0	-2.1	5.9	5.9	-1.9	-1.9
Tire cord and fabric	(1)	(1)	(1)	(1)	3.2	3.3	0.1	0.1
Cordage and twine	-1.4	-1.4	-1.4	-1.4	3.4	3.4	-1.2	-1.2
Nonwoven fabric	-0.3	-0.3	-0.3	-0.3	2.4	2.4	-0.2	-0.2
Apparel and fabricated textile products:								
Women's hosiery, except socks	-0.3	-0.3	-0.3	-0.3	12.8	14.9	-0.2	-0.2
Hosiery, n.e.c.	-0.3	-0.4	-0.3	-0.4	5.4	7.2	-0.2	-0.3
Apparel made from purchased materials	-4.8	-5.3	-4.8	-5.3	18.3	20.7	-4.5	-5.0
Curtains and draperies	-0.1	-0.1	-0.1	-0.1	14.7	14.7	0.6	0.6
House furnishings, n.e.c.	-1.1	-1.1	-1.1	-1.1	12.3	12.4	-0.3	-0.3
Textile bags	-0.5	-0.6	-0.5	-0.6	9.3	9.5	0.2	0.1
Canvas and related products .	-0.4	-0.4	-0.4	-0.4	8.1	8.2	0.3	0.3
Pleating, stitching, trimmings and Schiffli embroidery	-1.4	-1.6	-1.4	-1.6	11.2	13.6	-0.4	-0.6
Fabricated textile products, n.e.c	-0.3	-0.3	-0.3	-0.3	1.9	1.9	0.4	0.4
Luggage	-7.9	-7.9	-7.9	-8.0	14.3	14.4	-7.2	-7.3
Women's handbags and purses	0.1	0.1	(1)	(1)	9.0	9.1	15.3	15.3
Upstream sectors:								
Cotton	-0.6	-0.7	-0.7	-0.8	-1.8	-1.9	(1)	(1)
Cellulosic manmade fibers ...	-2.1	-2.3	-2.1	-2.3	-2.4	-2.5	-2.0	-2.2
Noncellulosic manmade fibers	-2.0	-2.1	-2.0	-2.1	-2.3	-2.4	-1.9	-2.1
Downstream sector:								
Composite	0.1	0.1	0.1	0.1	-0.2	-0.2	0.3	0.3
Rest of the economy:								
Agriculture, forestry, and fisheries	0.1	0.1	0.1	0.1	-0.1	-0.1	0.8	0.7
Mining	0.1	0.1	0.1	0.1	(1)	(1)	0.3	0.3
Construction	(1)	(1)	(1)	(1)	(2)	(2)	(2)	(2)
Nondurable manufacturing ...	0.1	0.1	(1)	(1)	-0.2	-0.1	0.2	0.2
Durable manufacturing	0.1	0.1	0.1	0.1	-0.1	-0.1	0.2	0.2
Transportation, communications, and utilities	0.1	0.1	0.1	0.1	-0.2	-0.1	0.3	0.3
Wholesale and retail trade	(1)	(1)	(1)	(1)	(2)	(2)	(2)	(2)
Finance, insurance, and real estate	0.1	0.1	(1)	(1)	-0.1	-0.1	0.2	0.2
Other services	(1)	0.1	(1)	(1)	-0.2	-0.1	0.3	0.3

[1] Change less than 0.05 percent.

[2] Nontradeable sector.

Source: Estimated by the staff of the USITC.

experiencing the greatest declines in employment are luggage (7.9 percent), apparel (5.3 percent), and lace and knit fabric goods (4.6 percent).

The effects on upstream sectors are the same as those under case 1 in terms of direction, but are greater in terms of magnitude. . All three sectors are negatively affected by declines in the domestic market for their products; all of the sectors experience declines in employment, production, and exports under this scenario. As with case 1, the downstream composite sector gains from trade liberalization. Tariff and quota elimination generate declines in the prices of various textile inputs used by this sector, thereby leading to slight increases in the sector's employment, production, and exports.

Estimated Impact of 1995 Uruguay Round Tariff Cuts

An additional simulation was undertaken to estimate the likely first-year effects of the Uruguay Round tariff cuts that took place in 1995 in the MFA sectors. These results represent estimates of what would likely have occurred in the 22 textile and apparel sectors if the reduction in the average 1995 ad valorem tariffs had taken effect in 1993, the base year for the USITC model. This simulation does not include the average reduction in ad valorem tariffs that went into effect in 1995 for any of the upstream, downstream, or reference sectors. In addition, this is a unilateral reduction simulation — it does not include any tariff reductions made by other countries, so U.S. exports might be understated. Also of importance, this simulation does not include any changes made to quotas (either the elimination of specific quotas or increases in quota growth rates that occurred in 1995).[28],[29] Furthermore, no attempt was made to quantify any effects that might have occurred in anticipation of changes to be made in the rules of

origin pursuant to section 334 of the Uruguay Round Agreements Act.[30]

In general, the impact of the 1995 tariff cuts on the U.S. economy and on the individual textile and apparel sectors is small, with economywide welfare gains amounting to an estimated $15 million.[31] Consumer prices for all of the textile and apparel sectors decline, but generally by less than 0.1 percent. Almost all of the 22 textile and apparel sectors, experience declines in production and employment, but none of these sectoral changes is more than 0.2 percent. The sectors also show similarly small increases in imports.

Automobiles

History of Automobile Import Restraints with Japan

Automobile imports[32] to the United States from Japan have been subject to either a voluntary restraint agreement (VRA) or a voluntary export restraint (VER) since 1981.[33] Since the official end of the VRA in 1985, automobile exports from Japan have been subject to company based quotas. From Japan Fiscal Year (JFY)[34] 1986 until the end of JFY 1993, Japan's Ministry of International Trade and Industry (MITI) managed the quotas on the export of vehicles to the United States. Since the change in 1985 from a VRA to a VER,[35] the U.S. Government is on record as opposing the VER and the Japanese Government makes no reports on the VER to the U.S. Government.[36] By the end of JFY 1993, the Japanese

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[28] The complexity of the individual bilateral agreements precluded any estimation of changes made to textile and apparel quotas during 1995.

[29] In an earlier study (1994), the Commission did include estimates of the likely effects of phasing out the MFA quotas. However, in the 1994 study, the analysis covered the entire 10-year period rather than for just the first year. An additional significant difference between the earlier study and the current analysis is that the 1994 study accounted for the effects of various changes in market access for U.S. exports. See, USITC, *Potential Impact on the U.S. Economy and Industries of the GATT Uruguay Round Agreements*, (1994).

[30] 19 U.S.C. 3592.

[31] This result is not unexpected because the tariff cuts for textiles and apparel generally are to be phased in across the entire 10-year period. In 1995, the average reduction in tariffs applied to the MFA sectors generally was less than 5 percent. In contrast, if tariffs are completely eliminated, estimated economywide welfare gains amount to $958 million.

[32] This trade restraint applies to on-the-highway automobiles, vans and 4-wheel utility vehicles, designed to transport passengers.

[33] For a history of auto restraints, see *The Economic Effects of Significant Restraints: Phase I, Manufacturing*, USITC publication 2222, Oct. 1989.

[34] The quota is in terms of the JFY which is from April 1 to March 31.

[35] A VRA is an agreement between countries to restrict trade, and a VER is unilaterally imposed.

[36] General Agreement on Trade and Tariffs, *Trade Policy Review: United States 1994*, Vol 1, Geneva; GATT, June 1994.

Government abolished the VER administered by MITI.

The original limit on passenger automobiles imposed in 1981 was 1.68 million vehicles per JFY. The limit was increased in JFY 1984 to 1.85 million vehicles. From JFY 1985 to JFY 1991 the limit was 2.3 million vehicles. For JFY 1992 the limit was reduced to 1.65 million units, which was in force for JFY 1993 as well.[37]

Previous Work

There have been a number of articles written concerning the economic effects of the original VRA.[38] This research arrives at similar conclusions with regard to the effect of the VRA on the quantity of imports. These studies estimate that the quantity effect of the VRA was to reduce Japanese exports to the United States by approximately one-half million cars per year. In trying to estimate the price effect caused by the decrease in auto exports from Japan, it is important to take into account the following: (1) the general increase in auto prices, (2) the impact of quality upgrading, and (3) the quantity effect of the VRA. Examining the increase in the price of autos and netting out the first two effects, gives the price impact of the VRA. The early studies estimate a range of price effects of 10 to 20 percent. Feenstra incorporates all three of the above considerations and estimates the impact of the VRA on the price of Japanese automobiles sold in the United States to be a 10 percent price premium for 1984. Using Feenstra's quota premium, De Melo and Tarr estimated the welfare loss to the United States to be $7.5 billion in 1984.

Since the early studies were made, a great deal has changed in the United States auto market. In 1981, when the VRA was first introduced, the demand for Japanese automobiles was increasing dramatically

and Japanese firms possessed no production capacity in the United States. Since then there has been a resurgence in demand for domestic automobiles and the market share of Japanese auto manufactures has been stable or decreasing in recent years. In addition, by 1993 Japanese firms were building approximately 1.5 million vehicles in the United States. The combined production of 1.5 million vehicles in the U.S. and the export quota of 1.65 million in 1993 gave Japanese firms a larger presence in the U.S. market than they had under the early 1980s quota level of 1.68 or 1.85 million autos.

The increased foreign direct investment by Japanese auto firms in the United States has made the VER less binding since the late 1980s. With the reduction of the limit to 1.65 million in 1992, the impact of the restraint changed substantially from the effect it had in 1991. As shown in table 3-8, 1991 imports were at 75 percent of the quota.[39] With the change in the quota in 1992, imports in 1992 and 1993 were at 95 and 96.8 percent of the quota, respectively.

Changes in the VER brought renewed interest in its economic effects. The most recent comprehensive look at the effect of the Japanese VER was by Adams et al.[40] Their analysis specifically examines the effect of the change in the VER from 2.3 million to 1.65 million in JFY 1992. Adams et al. use projections of yearly automobile demand for the 1990s and make assumptions about Japanese automobile production in the United States, in order to estimate whether the VER will be binding and its effect. In the scenarios they estimate, the quota was binding in 1993 and had a price effect. According to the assumptions made about Japanese production in the United States and the general trend in the prices of both domestic and foreign manufactured autos, a 1.5-percent additional increase above the industrywide price increase was needed in Japanese autos for supply to equal demand in 1993 in the presence of a 1.65 million auto import restraint.

The 1.5-percent price increase was used as a measure of the difference between the price of Japanese autos had the VER not been in effect and the price in the presence of the restraint. The trade

[37] Japan Times Weekly International Edition, vol 33, Issue 3, Jan. 24, 1993, p. 14.

[38] For examples of the studies of the VRA see Robert C. Feenstra "Quality Change Under Trade Restraints in Japanese Autos," Quarterly Journal of Economics, (Feb. 1988) 131-146., Robert W. Crandall, "The Effects of U.S. Trade Protection for Autos and Steel," Brookings Papers on Economic Activity, (1987), 271-288., Gary C. Hufbauer, Congressional Testimony, Reported in The Legacy of the Japanese VRAs, U.S. Congress, Joint Economic Committee, (1985) and Jamie de Melo and David Tarr, "Welfare costs of U.S. Quotas in Textiles, Steel and Autos", Review of Economics and Statistics, (1990), 489-487.

[39] In USITC, Import Restraints (1993), the auto restraint was not modeled for the year 1991 because 25 percent of the quota was unfilled. It was stated in the report that the changing of the quota might make this restraint binding in the future.

[40] F. Gerald Adams, Byron Gagnes, Gene Huang, "The Impact of Japanese Auto VRAs on the U.S. and Japanese Economies", Journal of Policy Modeling, vol 16, 1994, 147-164.

Table 3-8
Motor vehicles: Summary data, 1991-93

(Million dollars, except where indicated)

Item	1991	1992	1993
Shipments	133,861	144,200	161,500
Employment (1,000 workers)	316	314	319
Imports	54,136	56,042	61,760
Exports	14,892	17,265	18,135
Japanese Imports Subject to VER (in thousands of autos)	1,730	1,568	1,597
Japanese Quota (in thousands of autos)	2,300	1,650	1,650
Percent of Quota Filled	75.2	95.0	96.8

Source: Data on shipments from U.S. Department of Commerce, *U.S. Industrial Outlook - 1994*, employment from *Economic Indicators: 4th Quarter 1994*, and trade compiled from official statistics of the U.S. Department of Commerce.

weight needed to convert this price difference into a tariff equivalent is the percent of trade affected by the VER. The motor-vehicles sector that is specified in the Commission's model contains automobiles as well as pickup trucks, commercial cars and buses, and special purpose motor vehicles designed for highway use. Japanese autos subject to the VER are 26.67 percent of the trade in the motor vehicle sector. The tariff equivalent is the product of 1.5 percent and 26.67 percent, 0.4 percent.

Economic Effect of Removing the Automobile VER

The Commission model was used to estimate effects on the motor vehicle sector, auto parts and other upstream sectors such as tires, glass, engines, carburetors, etc, aggregated into one sector and the rest of the economy aggregated into nine reference sectors. Since the main consumers of autos are households, no downstream sectors were specified. Using this aggregation of the model, two simulations were run. In case one, the results of which are shown in table 3-9, the VER was removed. In case two, the results of which are shown in table 3-10, the VER and tariff on motor vehicles[41] were removed simultaneously.

The estimate of the economic welfare gain by removing the VER in 1993 is $588 million. This is approximately 8 percent of the effect shown by de Melo and Tarr. Since the VER was less binding in 1993 than in 1984 due to production in the United States by Japanese firms and the resurgence of demand for U.S. automobiles, the welfare effect in 1993 should be considerably smaller than the estimate

for 1984. As shown in table 3-9, the effect of removing the VER on employment, output, imports and exports in the auto sector is small. The effects on the other sectors of the economy seldom reached a 0.1-percent level. The reason for the sizeable welfare effect with only small effects on output, employment, imports, and exports is the return of the quota rents that were going to the foreign holders of the quota.

The removal of both the auto VER and tariff on motor vehicles, shown in table 3-10, results in a net welfare gain of $710 million. The incremental increase in the welfare measure caused by removing the tariff is the sum of the separate effects of removing the VER ($588 million) and removing the tariff on motor vehicles ($122 million) shown in chapter 6, p. 6-3. The effect on the motor vehicles sector in terms of employment, output, imports and exports is larger than those shown for removal of the VER alone and similar to the effects shown in chapter 6 for the tariff removal. Employment and output in the motor vehicles sector drops by 0.7 percent. Imports increase by 1.4 percent and exports fall by 0.2 percent. The effect on the rest of the economy is minimal with few changes in excess of 0.1 percent. The auto parts sector experiences a drop in imports of 0.3 percent.

Machine Tools

History and Operation of the VRAs

The voluntary restraint agreements (VRAs) with Japan and Taiwan on certain metalworking machine tools were the result of a petition for import

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[41] This is the tariff on the entire motor vehicles sector. For a description of what this tariff covers, see chapter 6.

Table 3-9
Motor vehicles: Economic effects of VER removal, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sector:								
Motor vehicles	-635	-0.1	-170	-0.1	219	0.3	-8	-0.1
Upstream sectors:								
Auto parts	-79	(4)	-27	(4)	-7	(4)	-4	(4)
Aggregate upstream except parts	-152	(4)	-20	(4)	2	(4)	-2	(4)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	-11	(4)	-17	(4)	(3)	(4)	-13	-0.1
Mining	-21	(4)	-2	(4)	2	(4)	-1	(4)
Construction	-34	(4)	3	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	-75	(4)	12	(4)	14	(4)	-7	(4)
Durable manufacturing	-365	(4)	-49	(4)	28	(4)	-19	(4)
Transportation, communications, and utilities	16	(4)	16	(4)	9	(4)	-6	(4)
Wholesale and retail trade	452	(4)	45	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate ...	174	(4)	84	(4)	2	(4)	-1	(4)
Other services	828	(4)	101	(4)	6	(4)	-7	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

restrictions filed by the National Machine Tool Builders Association under section 232 of the Trade Expansion Act of 1962. This provision authorizes the President to impose restrictions on imports that threaten the national security. The machine tool VRAs entered into force in 1987 for 5 years and were extended for 2 more years before expiring on December 31, 1993.[42] The 2-year extensions were less restrictive than the original VRAs. They covered only the numerically controlled (NC) machine tools included in the original VRAs[43] and allowed for phased increases in the ceiling levels over the original VRA levels.

Japan limited its machine tool exports to the United States to a specified share of apparent U.S. consumption for each product category covered by the VRA (table 3-11). Taiwan also limited its machine-tool exports in the same manner in the original VRA. In the 2-year extension, however, Taiwan limited its exports to specified quantity levels.

Summary data for machine tools are shown in table 3-12.[44] Aggregate fully adjusted quota-limit figures and exports to the United States from Japan and Taiwan under the VRAs for 1993 are shown in table 3-13. Exports to the United States from Japan and Taiwan were well below their specified quota levels in 1993. Trade sources indicate that Japan began expanding its machine tool production in the United States shortly after the VRA went into effect, thereby reducing U.S. demand for imported, Japanese-made machine tools.[45]

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[42] For more information on the VRAs, see USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase I: Manufacturing*, USITC publication 2222, Oct. 1989, and *Import Restraints* (1993). Because the VRAs expired in 1993, no effects of GATT URA liberalization in 1995 were estimated.

[43] The original VRAs also covered non-NC lathes, non-NC punching and shearing machines, and non-NC milling machines.

[44] Machine tools of the type covered by the VRAs accounted for about 38 percent of U.S. machine tool production in 1993.

[45] USITC, *Import Restraints* (1993), pp. 22-23.

Table 3-10
Motor vehicles: Economic effects of VER and tariff removal, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sector:								
Motor vehicles	-3,419	-0.7	-925	-0.7	1,202	1.4	-25	-0.2
Upstream sectors:								
Auto parts	-178	-0.1	-63	-0.1	-68	-0.3	21	0.1
Aggregate upstream except parts	-300	[4]	-49	[4]	-36	-0.1	3	[4]
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	822	0.1	178	0.1	-2	[4]	101	0.3
Mining	107	[4]	47	[4]	-4	[4]	8	0.1
Construction	41	[4]	11	[4]	[5]	[5]	[5]	[5]
Nondurable manufacturing	685	[4]	199	[4]	-71	[4]	66	[4]
Durable manufacturing	1,766	[4]	344	[4]	-129	[4]	139	0.1
Transportation, communications, and utilities	671	[4]	145	[4]	-50	-0.1	67	0.1
Wholesale and retail trade	-465	[4]	-29	[4]	[5]	[5]	[5]	[5]
Finance, insurance, and real estate ...	162	[4]	22	[4]	-9	-0.1	16	0.1
Other services	433	[4]	53	[4]	-27	-0.1	67	0.1

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

The shortfall in the quota fill-rate in 1993 for exports from Japan and Taiwan has also been attributed to other factors such as the relative competitiveness of U.S. machine-tool builders.

As part of the Uruguay Round Agreements (URA) the United States agreed to reduce tariffs on only about 13 percent of the imports of metalworking machine tools, based on the dutiable value of such imports in 1993. The average tariff for the machine tools will decline from 4.4 percent to 4.3 percent ad valorem by 1999.

Previous Work

Previous analyses of the effects of the machine tool VRAs have found that, in general, these effects were relatively modest. These analyses also found that during the latter years of the quotas' existence, the overall effects of the VRAs were reduced as the Japanese quotas became nonbinding. The Congressional Budget Office (CBO) estimated that, in 1987 through 1989, the annual quota rents accruing to exporters from both Japan and Taiwan amounted to

$100 million.[46] Dinopoulos and Kreinin estimated that the quota rents accrued to Japanese and Taiwan exporters amounted to $110 million and $10 million, respectively in 1987.[47] In a more recent study,[48] the USITC found that the quotas were binding only for imports from Taiwan in 1991. During this period, estimates obtained from model simulations showed that exporters from Taiwan accrued rents of approximately $6 million. In addition, the USITC CGE model estimated that liberalizing the machine tool sector in 1991 would have resulted in a potential welfare gain to the U.S. economy of approximately $31 million.

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[46] Congressional Budget Office, *Revenue Estimate for Auctioning Existing Import Quota*, CBO Office Memorandum, Washington, D.C., February 27, 1987.

[47] See Dinopoulos and Kreinin, "The U.S. VER on Machine Tools: Causes and Effects," Robert Baldwin, ed., *Empirical Studies of Commercial Policy* (Chicago: University of Chicago Press, 1991).

[48] See USITC, *Import Restraints*, (1993). In addition, the USITC, in a 1989 study, found that the cumulative quota rents to both Japanese and Taiwan exporters in

Table 3-11
Voluntary restraints: Annual market share limits for Japan and Taiwan, 1993

Type of machine	Japan	Taiwan Quantity	Market share[1]
	Percent	Units	Percent
NC lathes	60.27	263	10.94
Machining centers	54.03	413	10.54
NC milling machines	7.47	362	12.05
NC milling machines with controls	(2)	46	(3)
NC punching and shearing machines	21.56	(2)	(2)

[1] Market share was estimated by the staff of the USITC because the VRA with Taiwan for 1992-93 specified the quota in units.
[2] Product not covered by the VRA.
[3] Included in NC milling machines because data for NC milling machines with controls are not available.

Source: Compiled by the staff of the USITC from data of the U.S. Department of Commerce, Office of Agreements Compliance.

Table 3-12
Machine tools: Summary data, 1991-93[1]

(Million dollars, except where indicated)

Item	1991	1992	1993
Shipments	4,291	4,450	4,583
Employment (workers)	36,300	32,800	31,700
Imports	2,587	2,311	2,596
Exports	1,555	1,836	1,744

[1] The machine tool sector includes SIC 4-digit industries 3541 and 3542.

Source: Compiled from official statistics of the U.S. Department of Commerce and the U.S. Bureau of Labor Statistics.

Table 3-13
Machine tools from Japan and Taiwan: Quantity of quotas and of exports to the United States, 1993

Country	Exports	Quota	Percent filled
Japan	4,373	5,924	[1]74.0
Taiwan	782	1,084	72.1

[1] The quota for NC punching and shearing machines was 99-percent filled.

Source: U.S. Department of Commerce, Office of Agreements Compliance.

Economic Effect of the VRAs

As indicated in table 3-13, the quotas for Japan and Taiwan were not filled in 1993 on a country-level basis, and both quotas fell well below what could be considered the binding range.[49] Consequently,

elimination of the quotas in 1993 would not have caused a direct decline of the overall price of imported machine tools. Estimates of the tariff equivalent and the effects on U.S. net-welfare, domestic output, imports and exports would have all equaled zero.[50]

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[48]—Continued
1987 and 1988 ranged from approximately $5 million to $33 million. See USITC, *Import Restraints, Phase I*, (1989).

[49] Given the level of foreign direct investment in the machine tool sector and the competitiveness of U.S. machine-tool builders, it is unlikely that quotas had direct and significant effects on import prices at the levels filled (less than 75 percent for both Japan and Taiwan) in 1993.

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[50] The effects of tariff liberalization for the machine tool sector were not considered because the sector did not have "significant" tariffs as defined in chapter 1.

CHAPTER 4
Agriculture

This chapter presents the analyses of significant import restraints that exist for sugar, dairy products, meat, peanuts, and cotton. These restraints complement a variety of other price support and market stabilization programs for these agricultural products. These programs, along with descriptions of modeling procedures and evaluations of the modeling results, are described in the analyses below.

Sugar

Currently, the U.S. sugar program includes nonrecourse loans, domestic marketing allotments, and tariff-rate quotas.[1] Nonrecourse loans are the major price support instrument used by the Commodity Credit Corporation (CCC) of the U.S. Department of Agriculture (USDA) to support the price of sugar and other commodities. To qualify for loans, millers and processors must agree to pay the growers the USDA-established minimum price support levels based on the loan rates for cane sugar and beet sugar.[2] Loan rates differ by location so that

the loans would not distort the routine marketing of sugar. The loan program has been implemented effectively. Since the 1984/85 marketing year, no forfeitures of sugar have been made to the CCC.

Domestic marketing allotments for sugar, in place through at least 1995, also help to maintain the support prices by limiting the sales of domestically produced sugar. If the USDA projects that imports of sugar for human consumption in any fiscal year will be less than 1.250 million short tons, raw value, restrictions on the amount of domestic sugar that can be marketed are imposed. If this occurs, the USDA is required to establish "allotments."[3]

Tariff-rate quotas are also used to restrict the volume of imports. Without the higher tariffs imposed under the tariff-rate quotas, low-priced sugar in the world market would be free to enter the U.S. market. Extensive imports at lower world prices could depress domestic prices below the loan rate and result in large forfeitures of sugar to the CCC. However, imports are necessary since U.S. consumption exceeds its production. Imports in excess of the allotment during the designated quota period (over-quota imports) are subject to a 16 cents per pound rate of duty.[4] During the current quota period, which runs from October 1, 1994, to

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[1] For a more complete discussion of the history of the U.S. sugar program, see U.S. Department of Agriculture, *Sugar: Background for 1995 Farm Legislation, Economic Research Service,* Apr. 1995, p. 23; USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase II: Agricultural Products and Natural Resources,* USITC publication 2314, Sept. 1990, ch. 2; and USITC, *Industry & Trade Summary: Natural Sweeteners,* USITC publication 2545, Nov. 1992.

[2] Borrowers receive the established price per unit (pound) known as the loan rate. The sugar is used as collateral for the loan. Announced by the USDA on Jan. 26, 1995, the current national average raw cane sugar loan rate and refined beet sugar loan rate for 1994/95 were 18.00 cents and 23.43 cents per pound, respectively. The borrower may elect to repay the loan with interest within a specified period and regain control of the collateral commodity, or default on the loan. If a default occurs, the borrower forfeits, without penalty, the collateral commodity to the CCC. This program is also designed to prevent the accumulation of sugar by the CCC. For more details on nonrecourse loans, see USDA, *Sugar: Background for 1995 Farm Legislation,* pp. 24-25.

[3] The marketing allotment program is covered by the Food, Agriculture, Conservation, and Trade Act of 1990. For more discussion on marketing allotments, see Congressional Research Service, *Farm Commodity Programs: Sugar,* 95-317 ENR, Mar. 1, 1995; for the USDA calculated allotment formula for fiscal year 1995, see USDA, *Sugar: Background for 1995 Farm Legislation,* Apr. 1995, p. 27. Since the USDA's estimated imports were below 1.250 million short tons, allotments were triggered for fiscal year 1995.

[4] The general (column 1) rate of duty applicable to imports within the quotas is 0.625 cent per pound; however, most imports enter duty-free under special duty provisions (the Generalized System of Preferences and the Caribbean Basin Economic Recovery Act).

September 30, 1995, the U.S. sugar quota is 1.250 million short tons, raw value.[5]

During 1993, the Census Bureau registered the import level of 1.585 million metric tons, raw value. Of this quantity, 97 percent was raw sugar, with the remaining 3 percent refined sugar originating in Canada.

Table 4-1 presents the industry employment level and the value of shipments, imports, and exports for the U.S. sugar sector for 1991-93. Sugar accounted for the dominant share of U.S. consumption of sweeteners until 1985, when it was surpassed by corn sweeteners.[6] Sugar also lost market share to low-calorie sweeteners during the 1980s. However, U.S. sugar production increased from 7.31 million short tons in 1991/92 to 7.68 million short tons in 1993/94.[7] During the 1993/94 marketing year, the United States accounted for approximately 6 percent of the world production of sugar and 5 percent of world imports.[8]

In 1993, the price of sugar was also supported by quotas on imports of certain sugar-containing products, which prevent imports of these products from disrupting the price-support programs for cane sugar and beet sugar.[9] These quotas were

administered on a first-come, first-served basis.[10] However, no allotments were made for these quotas. The quotas applied to five categories of sugar-containing products: (1) blended syrups containing sugar, not in retail containers; (2) edible preparations containing over 65 percent sugar, not in retail containers; (3) sweetened cocoa powder; (4) flour mixes and doughs containing over 10 percent sugar, except doughs in retail containers; and (5) edible preparations containing over 10-percent sugar.

The Economic Effects of Liberalizing the U.S. Sugar and Sugar-Containing Products Sector

This section evaluates the economic effects of removing the quotas on imports of sugar and sugar-containing products in 1993. During that year, the United States maintained tariff-rate quotas for imports of sugar and quotas for sugar-containing products. The rate of filled quotas for sugar (the ratio of the actual imports to the tariff quota) ranged from 97 percent in 1990/91 to 91 percent during 1992/93 and 1993/94. The USITC CGE model is used to simulate the removal of the quotas for the year 1993. Following that analysis is an examination of possible effects of the URA in 1995, the year in which the URA became effective.

Previous Work

During the 1980s, several studies, using partial equilibrium and econometric analyses, estimated welfare effects associated with the sugar programs. These studies resulted in different estimates of net welfare effects of removing the U.S. sugar quotas, ranging from Hufbauer's $540 million to Schmitz's $1.3 billion.[11] In 1993, the General Accounting

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[5] The Secretary of Agriculture is empowered to establish the overall quota amount, and the United States Trade Representative is responsible for allocating the quota among the countries. For 1994/95, the aggregate quota cannot be less than 1.117 million metric tons (1.23 million short tons) for raw cane sugar, and not less than 22,000 metric tons (24,250 short tons) for refined sugar.

[6] See U.S. Department of Agriculture, *Sugar and Sweetener: Situation and Outlook Report*, Economic Research Service, June 1992.

[7] These production figures are from USDA, *Sugar and Sweetener: Situation and Outlook Report*, Mar. 1995. USDA's sugar statistics are mainly based on the fiscal year starting on Oct. 1 and ending on Sept. 30. The production figures included both cane sugar and beet sugar. In the United States, sugar cane is grown in Louisiana, Florida, Texas, and Hawaii, whereas sugar beets are grown mainly in five regions, Minnesota-North Dakota, Michigan-Ohio, the Great Plains, the Northwest, and California.

[8] After it reached its record high of 116.44 million metric tons in 1991/92, the world sugar production declined to 109.99 million metric tons in the 1993/94 marketing year. U.S. imports of sugar decreased from 2.19 million short tons in 1991/92 to 1.77 million short tons, raw value, in 1993/94, according to the USDA statistics.

[9] In 1995, these quotas were replaced by tariff-rate quotas.

[10] The quotas were imposed by Presidential Proclamation Nos. 5071 of June 28, 1983, and 5294 of Jan. 28, 1985.

[11] Five previous studies were cited in an earlier USITC report, *The Economic Effects of Significant U.S. Import Restraints*, USITC publication 2699, Nov. 1993. These five studies included (1) Stephen Neff, *Welfare Implications of Removing U.S. Import Quotas on Sugar and Dairy Products*, unpublished Ph.D. dissertation, Stanford University, 1988; (2) Gary C. Hufbauer, Diane T. Berliner, and Kimberly A. Elliott, *Trade Protection in the United States: 31 Case Studies* (Washington, DC: Institute for International Economics, 1986); (3) U.S. Department of Agriculture, *Sugar: Background for 1985 Farm Legislation*, Agr. Info. Bull. No. 478, Sept. 1984;

Table 4-1
Sugar: Summary data, 1991-93

Item	1991	1992	1993
Shipments (*million dollars*):[1]			
Raw cane sugar	1,345	1,360	1,425
Cane sugar refining	2,954	3,401	3,400
Beet sugar	2,306	3,239	3,375
Employment (*FTEs*):[1]			
Raw cane sugar	6,200	6,200	6,200
Cane sugar refining	4,900	4,900	4,900
Beet sugar	7,600	7,600	7,600
Imports (*million dollars*):			
Raw cane sugar	608	586	551
Beet sugar	37	10	42
Exports (*million dollars*):[2]	199	144	99

[1] The three subsectors depicted in the table correspond to 4-digit SIC categories: raw cane sugar (2061), cane sugar refining (2062), and beet sugar (2063).
[2] The value includes exports of cane and beet sugar.
Source: U.S. Department of Commerce.

Office (GAO) published a report on the sugar program and reached the conclusion that the sugar program, through its price support loans and tariff-rate import quotas, caused consumer losses estimated at $1.4 billion annually.[12] This was an average based on 1989, 1990, and 1991 cost estimates. For the 3-year period, the estimates of the annual average gains of sugar producers and high fructose corn syrup manufacturers from the sugar program were $561 million and $548 million, respectively.[13] The GAO report also cited a number of estimates of consumer losses, producer gains, and net losses from other studies. For instance, Marks estimated the consumer losses because of the sugar program to be as high as $3.18 billion in 1991 by using 1984-89 data.[14] His estimate of the net welfare cost was $734 million, which was close to the earlier USDA estimate. A more recent USDA study used a hypothetical price gap between the world price and the U.S. price to estimate the effects of the U.S. sugar program.[15] During the 1992-94 fiscal years, the projected price gap would have been 5 cents a pound, or $100 per short ton. For each 1-cent price gap, the premium would have been $20 per ton. During the two fiscal years, for each 1-cent-per-pound premium, industry revenues were raised by $150 million a year and consumer losses would be $178 million.[16]

Model Specifications

Unlike the previous research summarized above, this current study uses a CGE framework to estimate

[11]—*Continued*
(4) Andrew Schmitz, Roy Allen, and Gwo-Jium Mike Leu, *Alternative Agricultural and Food Policies and the 1985 Farm Bill*, Gordon C. Rausser and Kenneth R. Farrell, eds. (San Leandro, CA: Blaco Printers, 1984); and (5) Robert Sturgiss, Heather Field, and Linda Young, *1990 and U.S. Sugar Policy Reform*, Australian Bureau of Agricultural and Resource Economics, discussion paper 90-4, Apr. 1990. The welfare effects estimated by Neff and the USDA (1984) were $594 million and $725 million, respectively. The only range estimate of the welfare effects cited in the USITC report was the one estimated by Sturgiss, which ranged from $776 million to $785 million. For more information about these estimates, see the USITC report or the individual studies.

[12] U.S. General Accounting Office, *Sugar Program: Changing Domestic and International Conditions Require Program Changes*, GAO/RCED-93-84, Apr. 1993, p. 53.

[13] According to the GAO report, all estimated values are in 1991 dollars. Its estimate of the annual average net national loss for these 3 years was $276 million, of which 60 percent was transferred to foreign quota holders, while approximately 40 percent was sheer domestic deadweight loss, i.e., the efficiency loss to consumers that is not transferred to foreign quota holders. See chapter 7 for further discussion of deadweight loss.

[14] Stephen Marks, *A Reassessment of Empirical Evidence on the U.S. Sugar Program*, paper presented at the State Department Conference on "Sugar Markets in the 1990s," May 23, 1991.

[15] The price gap is based on a projection where major industrialized nations would remove policies that affect trade in sugar.

[16] USDA, *Sugar Background for 1995 Farm Legislation*, Apr. 1995, p. 27-30. The gains and losses are based on the average amounts of U.S. production and consumption during fiscal years 1992-94. The average annual production and consumption amounted to 7.5 million tons and 8.9 million tons, raw value, respectively.

the effects of the sugar and sugar-containing products restraints on the U.S. economy. The USITC CGE model details two liberalized sectors, sugar processors[17] and sugar-containing products; one upstream sector, sugar crops; one downstream sector, bakery products and cereal breakfast foods; and nine aggregate sectors representing the remainder of the U.S. economy. Removal of the sugar tariff-rate quotas, with all domestic policies remaining intact, would result in a large number of loan defaults by sugar processors. To avoid this outcome, the model simulates the joint removal of the U.S. sugar quotas and the elimination of CCC nonrecourse loans. The effects of both the U.S. tariff-rate quotas on sugar and the quotas on sugar-containing products in 1993 are estimated using an equivalent ad valorem tariff, as described in chapter 7. The tariff equivalent for sugar was calculated by using the price-gap method. The tariff equivalent for the sugar-containing product sector was calculated by using the · cost-share method, derived by multiplying the estimated tariff equivalent for sugar by the average sugar-cost share of the sugar-containing products covered by the quotas.[18] The quotas on both sectors were removed simultaneously to prevent the market distortions that would arise from removing only one quota while leaving the other intact. In 1993, the sugar processor sector had an estimated tariff equivalent of 93.7 percent, and the sugar-containing products sector had a tariff equivalent estimated to be 1.5 percent.[19]

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[17] Sugar processors include sugarcane millers, cane sugar refiners, and beet sugar processors.

[18] The five categories of sugar-containing products, which are listed in the text, are contained in the following nine broad categories (the equivalent corresponding 4-digit SIC industries follow in parentheses):

> condensed and evaporated milk (2023); salad dressing and sauces (2035); blended and prepared flour (2045); wet corn milling (2046); candy and confectionery products (2064); chocolate and cocoa products (2066); flavoring extracts and syrups (2087); roasted coffee (2095); food preparations, n.e.c. (2099).

These nine categories comprise the sector of "sugar-containing products" in the USITC CGE model.

[19] The ad valorem tariff equivalent for raw cane sugar, 93.7 percent, was calculated by taking the difference between the U.S. price and the world price inclusive of transportation costs and import duties; this difference was then stated as a percentage of the world price. In 1993, the world price for sugar was 10.03 cents per pound and the U.S. price was 21.82 cents per pound. The average transportation charges from CBERA countries

The Effects of Removing the U.S. Sugar and Sugar-Containing Products Restraints

The overall effect of liberalizing both sectors, sugar and sugar-containing products, is a net welfare gain of approximately $661 million if the quotas had been removed in 1993. Contributing to the gain in net welfare was the decline in prices of imports in the sugar sector by approximately 44.3 percent. Across the economy, net employment and output would experience negligible declines. In addition, estimated net imports would increase by approximately $613 million, or 72 percent, and net exports would decline by $10 million, or approximately 4 percent.

Table 4-2 presents estimates of the effects of liberalization on domestic employment, output, and trade. The sugar processor sector would experience a decline in employment of approximately 1,633 full-time equivalent workers (jobs), or by 6.7 percent. Output in this sector would also fall by approximately $668 million. However, model estimates show that the sugar-containing products sector would experience a small decline in employment of 61 jobs and in output of less than one-tenth of 1 percent. This smaller decline in the model estimates was partially the result of lower prices that the sugar-containing products sector would experience with the removal of the sugar restraints. The sugar crops sector, an upstream supplier to the sugar processor sector, would also experience a decline in employment and output of approximately 5.1 percent. The one downstream sector, bakery products and cereal breakfast foods, would benefit slightly from liberalization.[20]

The model results show that imports of sugar-containing products would have increased, but by a much smaller amount, $52 million (or 1.6 percent). Most of the products in the sugar-containing products sector are not covered by the quotas. In many cases, both quotas have diverted U.S. imports towards sugar-containing products that are not subject

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[19]—Continued
to the U.S. East Coast were 1.7254 cents per pound. The sources for these data were USDA, *Sugar and Sweetener: Situation and Outlook Yearbook*, March 1995, and the U.S. Department of Commerce. Using the cost-push method described in ch. 7, the tariff equivalent for sugar-containing products was estimated to be 1.5 percent.

[20] With a decline in the price of sugar, it is likely that downstream consumers who could substitute between sugar and high fructose corn syrup (HFCS) would substitute toward sugar and away from HFCS. However, because of limitations in the CGE model, it is not possible to show this effect.

Table 4-2

Sugar: Economic effects of removing the import quotas, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sectors:								
Sugar processors ...	-1,633	-6.7	-668	-6.7	613	72.4	-10	-4.1
Sugar-containing products	-61	(4)	-18	(4)	52	1.6	3	(4)
Upstream sector:								
Sugar crops	-142	-5.1	-196	-5.1	(3)	-5.1	(3)	-5.1
Downstream sector:								
Bakery products and cereal breakfast foods ...	53	(4)	10	(4)	(3)	(4)	(3)	(4)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	(4)	(4)	8	(4)	-1	(4)	15	(4)
Mining	-18	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Construction	-49	(4)	(4)	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	65	(4)	48	(4)	-2	(4)	7	(4)
Durable manufacturing	-125	(4)	-1	(4)	25	(4)	-9	(4)
Transportation, communications, and utilities	-64	(4)	(4)	(4)	5	(4)	-5	(4)
Wholesale and retail trade	325	(4)	36	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate ...	136	(4)	75	(4)	1	(4)	(4)	(4)
Other services	1,513	(4)	171	(4)	3	(4)	2	(4)

[1] Full-time equivalents.

[2] In millions of dollars in base year prices.

[3] Change less than $500,000.

[4] Change less than 0.05 percent.

[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

to the quotas. In addition, it is possible that liberalization would result in a decline of imports of sugar-containing products.[21] However, because of a lack of industry detail in the current USITC model, it is not possible to capture this potential result.

[21] For further discussion on the effect of quotas on all sugar-containing products, see Cathy Jabara, "Effects of Sugar Policy on U.S. Imports of Processed Sugar-Containing Foods," *Agricultural Economics*, vol. 3 (1989), pp. 131-46. In this paper, Jabara found a positive relationship between the imports of sugar-containing products and the ratio of the U.S. price of sugar to the world price of sugar. This result suggests that when the U.S. price of sugar falls relative to the world price of sugar, imports of sugar-containing products could fall as well.

The Implications of the Uruguay Round Agreements on the U.S. Sugar Sector

Implementation in January 1995 of the URA did not change the basic features of the U.S. sugar programs. The two-tiered, tariff-rate quota system remained in place, and the low duty applicable to in-quota imports was not changed.[22] However, under

[22] USDA, *Sugar and Sweetener: Situation and Outlook Report*, Dec. 1994, p. 19. The import fee on refined sugar of 1 cent per pound, which is applicable to both in-quota and over-quota imports, will be converted to a tariff.

the URA implementing legislation, fees and quotas imposed under section 22 of the Agricultural Adjustment Act of 1933[23] were eliminated and converted to tariffs. In 1994, the only fee (tariff) on sugar imposed under section 22 authority of the Agricultural Adjustment Act of 1933 was a 1-cent-per-pound fee on refined sugar imports, which, effective January 1, 1995, was replaced by a new tariff on sugar. The second tier or over-quota duty of 16 cents per pound, raw value, was raised by 1 cent to 17 cents in 1995, but is scheduled to be phased down to 14.45 cents per pound over 6 years.

Under the URA, the United States has agreed to a minimum floor on the import quota (low-duty) level of 1.25 million short tons, raw value, annually, comprised of 24,000 tons of refined sugar and 1.226 million tons of raw sugar. The total U.S. import quota for the 1994/95 quota year (August 1, 1994, to September 30, 1995) is 1,458,333 short tons, which is the same as the U.S. agreed-upon figure based on an annual or 12-month basis.[24]

For sugar-containing products, the United States agreed, under the URA, to replace then existing section 22 quotas with tariff-rate quotas that would provide a level of protection comparable to the section 22 quotas.[25] The within-quota tariff rates for these products remained unchanged at between 6 and 12.2 percent ad valorem. The over-quota tariff rates are based on the tariff equivalent for refined sugar and will be reduced by 15 percent over the next 6 years.

and are likely to be so in 1995. Because the current over-quota duty is prohibitive, the 1-cent increase in 1995 in the over-quota duty will not likely affect the amount of imports. The new tariff-rate quotas for sugar under the URA came into effect on October 1, 1995. The amount of the tariff-rate quota for the 1996 fiscal year is about the same as the one for the 1995 fiscal year. No significant changes in import prices and domestic prices are anticipated in the sugar sector as a result of the implementation of the URA. Under these conditions, it may be concluded that, in 1995, the URA will have a negligible effect on the U.S. sugar industry and imports. Several other Government studies have also reached the same or similar conclusions about the URA's insignificant effects on the sugar sector.[26]

As noted earlier, the in-quota tariff rates for the sugar-containing products remained unchanged at between 6 and 12.2 percent ad valorem and the over-quota tariff rates were based on the tariff equivalent for refined sugar and will be reduced by 15 percent over the next 6 years. Since over-quota duties are generally considered to be prohibitively high and tariff-rate quotas for refined sugar are usually binding, it is anticipated that the tariff-rate quotas for sugar-containing products will also be binding in 1995. Thus, it is estimated that the URA will have a negligible effect on U.S. imports and production of the sugar-containing products in 1995 as well.

The Effect of the First-Year Uruguay Round Changes

As noted earlier, during the past 4 years, the rate of filled quotas (the ratio of the actual imports to the tariff quota) ranged from 97 percent in 1990/91 to 91 percent during 1992/93 and 1993/94. These rates could be regarded as being within the binding range

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[23] 7 U.S.C. 624. Section 22 authority continues to apply to U.S. agricultural imports from those countries that are not members of the World Trade Organization (WTO).

[24] Ibid., p. 52. The total U.S. import quota for 1994/95 includes specialty sugars and covers 14 months. The annualized quota is 1.25 million short tons.

[25] These quotas will range from 1,500 metric tons for articles containing over 65 percent by dry weight of sugar and for blended syrups containing sugar to 64,709 metric tons for articles containing over 10 percent by dry weight of sugar.

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[26] Several other studies reached the same or similar conclusions. For instance, a USDA study concluded that the URA will have a limited impact on world sugar markets, and that U.S. production, consumption, and trade will remain generally unaffected by movement on the world market in 1995. The URA resulted in zero percent changes in its estimates of U.S. imports, production, and the domestic price from its baseline projections. This implies that the URA did not affect these variables. For details on its estimates, see USDA, *Effects of the Uruguay Round Agreement on U.S. Agricultural Commodities*, Mar. 1994, pp. 25-26. According to the USITC report, *Potential Impact on the U.S. Economy and Industries of the GATT Uruguay Round Agreements*, USITC publication 2790, June 1994, p. II-25, the URA will likely have a negligible effect on U.S. trade and production of the majority of products in the sugar, other sweetener, and ethanol sector because of small duty reductions and the continuation of domestic support programs. The URA also will have a negligible effect on U.S. employment and domestic prices in this sector.

Dairy

For more than 40 years prior to the URA in 1995, U.S. imports of most dairy products were subject to import quotas imposed under section 22 of the Agricultural Adjustment Act of 1933 to prevent imports from materially interfering with the USDA price support program for milk. Through this program the U.S. Government supports the domestic price of milk by purchasing butter, cheddar cheese, and nonfat dry milk.[27] In addition, there has been an average tariff on under-quota imports of dairy products of 6.5 percent ad valorem. Table 4-3 presents the level of employment, and the value of shipments, imports, and exports, by dairy manufacturing sector for 1991-93.

The U.S. dairy quotas restricted imports of virtually all products derived from cow's milk. These quotas limited imports of dairy products to a quantity equivalent to approximately 2 percent of U.S.

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[27] For a detailed history and description of the current operation of the U.S. dairy programs, see USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase II: Agricultural Products and Natural Resources*, USITC publication 2314, Washington, DC, Sept. 1990, ch. 3, and USITC, *The Economic Effects of Significant U.S. Import Restraints*, USITC publication 2699, Washington, DC, Nov. 1993, ch. 4.

production of milk. In recent years, the U.S. dairy quotas have been substantially filled (nearly 99 percent).[28] Most of the dairy quotas were allocated on a country-by-country basis and administered by the USDA through a licensing procedure. However, some quota products were not subject to license and were allowed to enter the United States on a first-come, first-served basis.

The Economic Effects of Liberalizing the U.S. Dairy Sector

The base year for this study is 1993, a year in which the dairy quotas were in place. Consequently, the analysis simulates the removal of the quotas (and tariffs) for the year 1993. Following that analysis, the USITC model is used to simulate the implementation of the first year of the URA changes, i.e., 1995. Dairy experts at USDA view the URA above-quota tariff rates as being prohibitive. That is, no above-quota imports of dairy products are expected. Therefore, the primary impact of the URA is the expansion of below-quota imports.

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[28] See USITC, *Industry Trade & Summary: Dairy Produce*, USITC publication 2477 (AG-3), Jan. 1992.

Table 4-3
Dairy: Summary data, 1991-93

Item	1991	1992	1993
Shipments (*million dollars*):			
Butter	1,231	1,034	(2)
Cheese	16,380	18,352	(2)
Dry/condensed milk products	6,344	7,541	(2)
Cream[1]	21,137	21,927	(2)
Employment (*FTEs*):			
Butter	1,700	1,500	(2)
Cheese	35,000	36,300	(2)
Dry/condensed milk products	13,600	15,200	(2)
Cream[1]	65,500	63,400	(2)
Imports (*million dollars*):			
Butter	1.7	1.6	2.5
Cheese	420.0	433.8	464.4
Dry/condensed milk products	280.3	344.7	301.6
Cream[1]	6.3	5.1	4.4
Exports (*million dollars*):			
Butter	45.4	158.2	170.1
Cheese	37.9	52.6	60.1
Dry/condensed milk products	376.5	494.5	575.5
Cream[1]	42.8	53.0	71.0

[1] The data for this sector are for the entire fluid milk sector, of which cream is a part.
[2] Not available.

Source: U.S. Department of Commerce.

Previous Work

Much of the research on the U.S. dairy industry has focused on the economic effects of removing the dairy price support programs within the United States, leaving the trade barriers in place.[29] However, a second strand of research examines commercial policy issues in the dairy sector. Two recent examples include Hufbauer and Elliott (1994) and Blayney and Fallert (1990).[30] Hufbauer and Elliott, employing a partial equilibrium model for the year 1990, estimate a net national economic welfare gain of $104 million.[31] This gain is for liberalizing the dairy quotas only, leaving the tariffs on dairy products in place. Alternatively, Blayney and Fallert examine the impact on milk support prices if dairy trade were liberalized. They estimate that the 1987 price level for milk would have fallen from $12.51 per hundred weight (cwt) to $10.63 per cwt. In addition, they estimate that milk production would fall and prices would become more variable.

Model Specification

The USITC CGE model highlights the dairy farm sector, four dairy manufacturing sectors (butter, cheese, dry/condensed milk products, and cream), and nine aggregate sectors that constitute the rest of the U.S. economy. Although the dairy manufacturing sectors were protected by quotas in 1993, a main

beneficiary was the dairy farm sector, which produces raw milk and is upstream to the dairy manufacturing sectors. Removal of the dairy quotas with all domestic policies remaining intact, would have entailed an impossible expansion of CCC purchases of dairy products. That is, in order to continue supporting milk prices, the CCC would have to buy all excess dairy products (including imports) in the U.S. market. To avoid this outcome, the model simulates the joint removal of the U.S. dairy quotas and the elimination of CCC purchases of dairy products.[32]

The effects of the U.S. dairy quotas are estimated by means of an equivalent ad valorem tariff.[33] USDA collects both domestic and world price data for whole milk powder, butter, and cheese. These three price series serve as a basis for the estimates of the tariff equivalents of the U.S. dairy quotas used in the CGE model. The butter and cheese sectors have a straightforward application of the price-gap method because data exist for both domestic and world prices.[34] For the other two sectors, dry/condensed milk products and cream, the price gap for whole milk powder is used as a proxy because these sectors contain primarily milk and cream products, which have a high butterfat content, and because world price data for these sectors are not available. The 1993 tariff equivalents are butter, 20.8 percent; cheese, 37.4 percent; dry/condensed milk products, 60.3 percent; and cream, 60.3 percent.[35]

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[29] This research includes LaFrance and de Gorter, H., "Regulation in a Dynamic Market: The U.S. Dairy Industry," *American Journal of Agricultural Economics* (Nov. 1985), pp. 821-32; Masson and Eisenstat, "Welfare Impacts of Milk Orders and the Antitrust Immunities for Cooperatives," *American Journal of Agricultural Economics* (May 1980), pp. 270-78; and. Dahlgran, "Welfare Costs and Interregional Income Transfers Due to Regulation of Dairy Markets," *American Journal of Agricultural Economics* (May 1980), pp. 288-96.

[30] Gary C. Hufbauer and Kimberly A. Elliott, *Measuring the Costs of Protection in the United States*, Washington, DC: Institute for International Economics, 1994, and Don Blayney and Richard Fallert, *Effects of Liberalized Dairy Imports on the Dairy Support Program*, Washington, DC: USDA, Feb. 1990.

[31] This net effect is the difference of the consumer gain of $1,184 million and the producer loss of $835 million and the quota rent loss of $244 million. Since Hufbauer and Elliott assume that the quota rents are captured domestically and just represent a transfer within the U.S. economy, they are not part of the efficiency gain from liberalizing the quotas.

[32] This is modeled here as a reduction in government demand (by the amount of CCC purchases in 1993) in the dairy product sectors. Furthermore, milk-marketing orders are not explicitly modeled. It is assumed that they cease to regulate the prices that processors pay for raw milk.

[33] The traditional price-gap method is used to estimate the tariff equivalents for the dairy quotas. A modified price-gap method as described in Benoit-M. Papillon, "Measuring Non-Tariff Barriers to Differentiated Import Products," *Contemporary Economic Policy*, vol. 12, July 1994, pp. 67-78, was considered. However, the requisite data were not available to use this methodology for the U.S. dairy quotas.

[34] The world price data USDA collects in the cheese sector are prices for cheddar cheese. Consequently, a tariff equivalent for cheddar cheese is used as a proxy for the cheese sector, although there are many different types of cheeses.

[35] In 1993, the average world price (including transportation costs to the United States) for butter was $1,343/MT, for cheddar cheese $2,106/MT, and for dry whole milk $1,625/MT. In 1993, the average U.S. price for butter was $1,623/MT, for cheddar cheese $2,893/MT, and dry whole milk $2,605/MT. These pricing data are from *Dairy: World Markets and Trade* published by USDA.

The welfare effects of quota liberalization can be affected by the assumptions concerning the rents generated by quotas. The quotas for butter and cheese require USDA licenses that are allocated to qualified domestic importers, implying that the quota rents most likely would accrue to these domestic firms. However, recent research on the cheese quotas by Hornig et al. indicates that the export side of the cheese market is highly concentrated, resulting in market power for both the importers and exporters. They estimate that in 1980 the quotas generated rents of about $41 million for importers and $52 million for exporters. Based on this work, the quota rents are split on a 50/50 basis between domestic importers and foreign exporters for both the butter and cheese sectors.[36] The quotas for the dry/condensed milk product and cream sectors are administered by the U.S. Customs service on a first-come, first-served basis. Consequently, it is assumed that foreign exporters capture all of the quota rents in these two sectors because the import side is unconcentrated and the foreign exporters benefit from higher prices for their products.

The Effects of Removing the U.S. Dairy Quotas

The model estimates show that the overall effect of liberalizing the dairy quotas in 1993 is a welfare gain of approximately $1 billion to the U.S. economy. Contributing to the gain in economic welfare is the estimated decline in prices as a result of liberalizing the dairy sector. Specifically, the model estimates show that the largest price declines occur for dairy product imports: (1) butter, -17.2 percent; (2) cheese, -22.3 percent; (3) dry/condensed products, -37.7 percent; and (4) cream, -39.5 percent. Table 4-4 presents the model estimates of employment, output, and trade effects of unrestrained imports in the U.S. dairy sector. The dairy farm sector experiences declines of less than 2 percent in output and employment of $347 million and 1,345 full-time equivalent (FTE) workers, respectively. Employment and output were estimated to fall in all of the dairy manufacturing sectors, with the butter sector experiencing the largest relative decline of nearly

4 percent followed by the dry/condensed milk products sector with a decrease of approximately 3.4 percent in both employment and output. In all liberalized sectors, imports increase and exports decrease. The model estimates showed that the cheese and dry/condensed milk products sectors experience the largest increase in imports of $401 million and $346 million, respectively. In addition, both of these sectors experience a relatively large increase in imports of approximately 60 percent.

The Implications of the Uruguay Round Agreements on the U.S. Dairy Sector

Under the URA, the United States agreed to significantly alter the way in which it regulates imports of dairy products. The United States has agreed to replace its section 22 quotas, which prevented any imports once the quota was filled, with tariff-rate quotas that allow over-quota imports at a higher tariff rate. In addition, the average under-quota tariff rate on dairy products will be reduced in stages (over a 6-year phasing-in period) to 6.4 percent ad valorem.[37]

The tariff-rate quota for cheese in the first year of the agreement is set at 110,999 metric tons (MT), slightly more than the quantity allowed in under the section 22 quotas. The cheese quota is to increase to 141,991 MT by the end of the 6-year phasing-in period (or by approximately 5,165 MT per year). New access will be allocated by country. In addition, the tariff-rate quota for dairy products other than cheese is to be increased from 13,700 MT to 22,785 MT (approximately 1,514 MT per year) of milk fat and from 16,100 MT to 26,825 MT (approximately 1,788 MT per year) for nonfat solids by the end of the 6-year phase-in period.

Over-quota tariffs on imports of dairy products have been set and will be adjusted as follows over the phase-in period:

> **Butter:** A base tariff of 181.3 cents per kilogram (about 150 percent ad valorem equivalent) will be reduced to 154.1 cents per kilogram (about 125 percent ad valorem
> - equivalent);

[36] See Hornig, Boisvert, and Blandford, "Explaining the Distribution of Quota Rents From U.S. Cheese Imports," *Australian Journal of Agricultural Economics* (Apr. 1990), pp. 1-20; and Hornig, Boisvert, and Blandford, "Quota Rents and Subsidies: The Case of U.S. Cheese Import Quotas," *European Review of Agricultural Economics* (1990), pp. 421-34.

[37] For an analysis of the long run effects of all the changes to dairy imports under the URA, see *Potential Impact on the U.S. Economy and Industries of the GATT Uruguay Round Agreements*, USITC publication 2790, June 1994.

Table 4-4
Dairy: Economic effects of removing the import quotas, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sectors:								
Butter	-225	-3.9	-108	-3.9	1	18.1	-5	-3.8
Cheese	-633	-2.9	-441	-2.9	401	59.1	-1	-2.4
Dry/condensed milk products	-700	-3.4	-304	-3.4	346	62.1	-13	-2.8
Cream	-480	-0.6	-180	-0.6	2	39.1	(3)	-0.5
Upstream sector:								
Dairy farms	-1,345	-1.2	-347	-1.2	(3)	-1.3	(5)	(5)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	-806	-0.1	-130	(4)	-9	-0.1	21	0.1
Mining	-26	(4)	25	(4)	(4)	(4)	3	(4)
Construction	-17	(4)	43	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	-362	(4)	83	(4)	-35	(4)	30	(4)
Durable manufacturing	1,067	(4)	333	(4)	-30	(4)	84	(4)
Transportation, communications, and utilities	359	(4)	139	(4)	-9	(4)	25	(4)
Wholesale and retail trade	426	(4)	91	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate	23	(4)	209	(4)	-2	(4)	9	(4)
Other services	2,720	(4)	400	(4)	-5	(4)	34	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Cheese: A base tariff of 144.3 cents per kilogram (about 70 percent ad valorem equivalent for cheddar cheese) will be reduced to 122.7 cents per kilogram (about 60 percent ad valorem equivalent for cheddar cheese);

Nonfat dry milk: A base tariff of 101.8 cents per kilogram (about 50 percent ad valorem equivalent) will be reduced to 86.5 cents per kilogram (about 35 percent ad valorem equivalent).

The United States also agreed to a ceiling on the quantity of U.S. Government-assisted exports and to a ceiling on budgetary outlays for all dairy products. However, exports that meet URA standards for humanitarian relief are excepted. The Dairy Export Incentive Program (DEIP) will be the principal program affected; DEIP accounts for the majority of U.S. Government-assisted exports of dairy products. In general, by the final year of the agreement, the quantity of assisted exports is to be reduced by 21 percent and budgetary outlays are to be reduced by 36 percent from a base period of 1986-90. This puts a ceiling on these outlays of $117 million.

The Effects of the First-Year Uruguay Round Changes

For the Uruguay Round simulation, only the quantity of imports are allowed to increase; the tariffs and government programs remain in place. This is simulated by adjusting the model to allow an increase in cheese imports of 4.65 percent and an increase in butter, dry/condensed milk products, and cream of 11.1 percent. This increase in imports corresponds to the first-year increases agreed to by the United States.

The overall effect of increasing the under-quota quantity of dairy imports is a welfare gain of approximately $154 million. Most of the estimated effects on employment, output, imports and exports are negligible (less than one-tenth of 1 percent). The model results showed that the largest output and employment effects occur in the cheese and dry/condensed milk products sectors, with declines of 0.2 percent ($36 million and 51 FTEs) and 0.6 percent ($58 million and 133 FTEs), respectively.

Meat[38]

In 1993, U.S. authority to limit meat imports was set forth in section 204 of the Agricultural Act of 1956 and the Meat Import Act of 1979.[39] Under these provisions, an annually adjusted "trigger" level for meat imports is established. In years for which imports are judged likely to exceed the trigger level, the President must either impose direct import limits or negotiate voluntary restraint agreements (VRAs) with foreign governments. In practice, VRAs with major meat exporting countries have been more common than direct restraints.[40] In addition, certain meat imports were subject to tariffs that averaged 1.5 percent on an ad valorem basis in 1993.

In 1993 the VRAs applied to certain specific types of bovine meat and meat of sheep and goats imported from Australia and New Zealand.[41] Meat imports in the relevant categories amounted to 97.7 percent of the VRA level for Australia and 97.2 percent of the VRA level for New Zealand; thus, the VRAs may be considered effectively binding. Of the imports, 98.5 percent fell under a single tariff line describing

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[38] The analysis in this sector applies to red meats, primarily bovine meat and meat of pigs, sheep and goats (cf. SIC sector 2011), but excluding sausages, smoked meats, and similar products (cf. SIC sector 2013).

[39] The Meat Import Act of 1979 superseded the Meat Import Act of 1964, and dealt primarily with technical changes to the method of calculating the trigger level of meat imports referred to below.

[40] For a detailed discussion of the current operation of the U.S. meat program, see USITC, *The Competitive Position of Canadian Live Cattle and Beef in U.S. Markets*, USITC publication 1996, Washington, DC, July 1987, pp. 85-94 and appendices L through O.

[41] The maximum allowable imports under the relevant tariff lines were 649.9 million pounds for Australia and 425 million pounds for New Zealand.

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boneless frozen bovine meat.[42] Imports from Australia and New Zealand account for 87.4 percent of all U.S. imports of boneless frozen bovine meat. The general rate of duty for imports of boneless frozen bovine meat was 4.4¢/kg, or approximately 1.9 percent ad valorem. Imports of boneless frozen bovine meat originating in the European Community were subject to a tariff rate of 100 percent ad valorem.

Table 4-5 contains summary data on shipments, employment, imports, and exports in the meat-packing industry for recent years.

The Economic Effects of Liberalizing the U.S. Meat Sector

The analysis simulates the removal of all import restraints on red meat for 1993, including tariffs and the VRAs from Australia and New Zealand.[43] The quantitative results are dominated by the VRAs and are close to those which would be obtained by removing the VRAs alone. In accordance with the above analysis, the VRAs are modeled based on their effects on boneless frozen bovine meat. The estimates assume that such fluctuations in import prices of boneless frozen bovine meat from countries other than Australia and New Zealand as may arise from changes in U.S. policy are similar to those for the comparable product for those two countries.

Previous Work

The effects of U.S. meat import policies have been studied periodically by analysts at the Institute for International Economics.[44] For 1983, Hufbauer, Berliner and Elliott (1986) estimated in a partial-equilibrium analysis that the welfare cost of the Meat Import Act restraints to the United States

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[42] HTS 0202.30.60, "Meat of bovine animals, frozen: Boneless: other," hereinafter referred to as "boneless frozen bovine meat." This tariff line describes industrial beef products used as inputs into other food products, e.g. restaurant hamburgers.

[43] Sanitary and safety standards which may affect trade in meat are not explicitly dealt with here.

[44] Gary C. Hufbauer, Diane T. Berliner and Kimberly A. Elliott, *Trade Protection in the United States: 31 Case Studies*, Washington, DC, Institute for International Economics, 1986; and Gary C. Hufbauer and Kimberly A. Elliott, *Measuring the Costs of Protection in the United States*, Washington, DC, Institute for International Economics, 1994.

Table 4-5
Meat packing plants: Summary data, 1991-93

Item	1991	1992	1993
Shipments (million dollars)	49,326	50,434	(¹)
Employment (FTEs)	120,800	122,400	(¹)
Imports (million dollars).....................................	3,365	3,131	3,261
Exports (million dollars)	4,348	4,808	4,698

¹ Not available. Data for SIC 2011, meat packing plants.

Source: U.S. Department of Commerce.

was $280 million. For the 1989-90 period, Hufbauer and Elliott (1994) provided no estimate of the effects of the Meat Import Act since no restraints were in place at the time.

The OECD has estimated the effects of U.S. beef import restraints on both a producer-subsidy-equivalent (PSE) basis and on a consumer-subsidy-equivalent (CSE) basis.[45] For 1993, the "market price support" portion of the PSE, reflecting the difference between U.S. domestic and New Zealand international prices, was estimated to be 4.80 percent ad valorem, amounting to approximately $1.368 billion on a PSE basis and $1.511 billion on a CSE basis. These calculations are based on a comparison of Sioux Falls cutter cow prices to New Zealand milk cow prices.[46]

Model Specification

The USITC CGE model was used to estimate the removal of import restraints on the meat-packing sector. The other component of the red meat industry, prepared meats (including sausage), is considered to be downstream to the meat-packing sector.

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[45] Organization for Economic Co-Operation and Development, Directorate, *Tables of Producer Subsidy Equivalents and Consumer Subsidy Equivalents, 1979-1993*, Paris: OECD, on diskettes. See appendix F for a discussion of PSEs and CSEs and their relationship to tariff equivalents.

The OECD calculation for beef is consistent with the following microeconomic assumptions: (1) increased prices of cow carcasses are fully reflected in the price of industrial beef; (2) other components of the price of industrial beef, such as manufacturing costs and producers' markups, increase in a fixed relationship with carcass prices; and (3) the share of industrial beef production in total beef production is 50 percent.

[46] Milk cows and cutter cows (cows which have been culled from a dairy herd) are generally utilized for industrial beef production of the type primarily impacted by the Meat Import Act, while steers and heifers are generally utilized for retail and fancy cuts.

The modeling exercise highlights these two sectors, two upstream sectors (meat animals and feedgrains), two additional downstream sectors (leather and restaurants), and the nine sectors representing the rest of the U.S. economy.

The tariff equivalent of the VRA on red meat was calculated based on the OECD estimated price gap of 4.80 percent referred to above. Since imports of boneless frozen bovine meat from Australia and New Zealand constituted 52.3 percent of the value of model sector imports in 1993, this price gap was adjusted to reflect trade-weighting, yielding a tariff equivalent of 5.0 percent that was used in the model simulation.[47,48]

The estimated overall effect of removing tariffs and quotas in the meat-packing sector is a welfare gain of $185 million. Contributing to this gain in economic welfare is the estimated decline in consumer prices in the meat-packing sector of 0.2 percent. Prices of imported meat fall by 4.3 percent, and imports rise by 7.4 percent.

Table 4-6 presents the estimated output and trade effects of unrestrained imports in the meat-packing sector. In percentage terms, the largest impact of admitting unrestrained imports is the direct impact on the meat-packing sector. Output is estimated to decline by $193 million and employment by 45 full-time equivalent workers, or by 0.3 percent in each case. In absolute terms, the largest impact is on the upstream sector of meat animals, with output losses of $273 million and employment losses of 427 full-time equivalent workers. Employment losses in the

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[47] The trade-weighted level of actual tariffs for the meat-packing sector is 1.0 percent.

[48] An attempt was made to estimate the tariff equivalent based on direct comparison of U.S. and undistorted world prices for non-retail boneless frozen bovine meat from Australia and New Zealand, making an adjustment for the perceived difference in quality between U.S. beef and Australia/New Zealand beef in the marketplace. This attempt was abandoned due to data limitations.

Table 4-6
Meat: Economic effects of removing the VRAs, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar	Percent	Dollar	Percent	Dollar[2]	Percent
Liberalized sector:								
Meat packing	-45	-0.3	-193	-0.3	204	7.4	-10	-0.3
Upstream sectors:								
Meat animal	-427	-0.3	-273	-0.3	-4	-0.3	-1	-0.2
Feedgrains	-82	-0.1	-43	-0.1	(3)	-0.1	-2	(4)
Downstream sectors:								
Prepared meats	10	(4)	7	(4)	-1	-0.2	(3)	0.1
Leather	14	(4)	2	(4)	-1	-0.1	1	0.1
Restaurants	302	(4)	25	(4)	-2	(4)	5	(4)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries ...	-57	(4)	-6	(4)	-1	(4)	7	(4)
Mining	-3	(4)	4	(4)	-1	(4)	1	(4)
Construction	-28	(4)	1	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	-108	(4)	-4	(4)	-13	(4)	13	(4)
Durable manufacturing	324	(4)	78	(4)	-22	(4)	25	(4)
Transportation, communications, and utilities	53	(4)	19	(4)	-6	(4)	8	(4)
Wholesale and retail trade	-58	(4)	4	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate ...	-35	(4)	17	(4)	-1	(4)	2	(4)
Other services	141	(4)	30	(4)	-2	(4)	7	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

feedgrain sector also exceed those in the meat-packing sector. Of the downstream sectors, the largest estimated gains occur in restaurants, with output increases of $25 million and employment gains of 302 full-time equivalent workers.[49]

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[49] The (negligible) increase in output and employment in the leather sector generated by the model experiment should probably be discounted. Meat animals are divided physically into meat and leather; thus, the reduction in meat animal production induced by falling meat prices would ordinarily be associated with output drops in both leather and meat. However, since this division takes place physically in the meat packing plant, the input-output data used in the model record substantial deliveries of "meat" (not meat animals) as an input to the leather sector, and the cheapening of the input "meat" thus induces a counterintuitive increase in leather production on the model experiment.

Changes in U.S. Import Restraints under the Uruguay Round Agreements

Under the Uruguay Round Agreements Act, the Meat Import Act of 1979 was repealed and the quotas imposed under the 1979 Act were replaced by a tariff-rate quota amounting to a minimum of 632,621 metric tons of imports in 1995. By comparison, the 1993 VRA amounted to 507,983 metric tons. However, the 1995 tariff-rate quota includes amounts allocated to countries other than Australia and New Zealand. The amounts assigned to Australia and New Zealand amount to a 16.4 percent increase over the 1993 VRA. In addition, unlimited amounts of imports from Canada and Mexico are considered to fall within

the tariff rate quota. The in-quota specific tariff for boneless frozen bovine meat remains at its current level of 4.4 cents/kg, and the new above-quota tariff rate is 31.1 percent ad valorem in 1995.

Uruguay Round Liberalizations in 1995[50]

As indicated above, the primary effect of the Uruguay Round agreements will be to replace the VRAs which have heretofore prevailed in most years with a tariff-rate quota; that is, a quota for imports with a relatively low tariff at the same level as currently, and a substantially higher tariff for above-quota imports. The U.S. meat trade policy in 1995 has been modeled by examining the allowable increase in boneless frozen bovine meat imports for Australia and New Zealand under the quota and projecting these to the meat sector as a whole, taking into account probable growth in meat demand between 1993 and 1995. Then, the tariff equivalent of the quota was lowered to the point at which imports reach the level implied by the 1995 quota. The above-quota tariff is sufficiently large that it is likely to prohibit above-quota imports.

Using the above method, the amount of liberalization implied by the Uruguay Round agreement was equivalent to a 5.2 percent increase in imports for the meat-packing sector as a whole. Had such a liberalization been in place in 1993, it would have yielded an estimated welfare gain of $157 million for the U.S. economy as a whole. Most effects on individual sectors are negligible, and comparable in their relative magnitudes to those in the previous simulation. Imports in the meat-packing sector are estimated to rise by $144 million in the simulation, while domestic output would fall by $137 million.

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[50] USITC, *Potential Impact on the U.S. Economy and Industries of the GATT Uruguay Round Agreements*, USITC publication 2790, June 1994, p. II-11, estimated that the long-run impact of the Uruguay Round Agreements on the meat sector would include a small overall improvement in the U.S. trade balance in the meat sector, small increases in imports and exports of beef, small increases in beef production, and negligible changes in employment. These results are not directly comparable with the results presented here for reasons stated in chapter 1. The increases in production and exports estimated in the 1994 report are due to increased U.S. market access not modeled here, primarily to Japan and South Korea, and to a lesser extent in the EU. The small increase in imports is consistent with the results presented here. Also, the results in the 1994 report cover all meat products and not beef alone.

Peanuts

The United States has had programs designed to increase or stabilize domestic peanut prices since 1934. Edible peanuts produced by domestic quota holders within the national poundage quota may be placed on loan with the Commodity Credit Corporation at the quota support price, and quota peanuts sold into the domestic market tend to sell at prices close to the quota support price. Peanuts grown in the United States by non-quota-holding farmers, and by quota holders in excess of their poundage quotas (known as "additional" peanuts), cannot be sold into the edible market, but must be either exported, sold into the domestic crush market, or placed under loan with the area growers' association at a substantially lower support price.

In support of these programs, import limitations have been in effect since 1953, under section 22 of the Agricultural Adjustment Act of 1933. The import quota has remained at its original level of 1.7 million pounds, or 775.18 metric tons (shelled basis), amounting to one-tenth of 1 percent of domestic edible consumption, although on occasion the quota has been temporarily increased due to shortfalls in the domestic harvest.[51] The import quota is designed so as to limit the cost of domestic price support programs to the U.S. Treasury. The United States is a net exporter of peanuts in most years, due to favorable agroclimatic conditions for peanut growing in certain Southern states. Such imports as do occur are primarily motivated by the high U.S. market price associated with domestic price support programs.

Table 4-7 presents summary data on U.S. production, imports, and exports of peanuts for recent years. The crop year under analysis, 1993/94, witnessed a substantial drop in production. This drop, due presumably to agroclimatic factors beyond the control of farmers, influenced the results of the analysis as described below. The higher level of imports in 1991/92 reflected the Presidential proclamation which temporarily increased the quota amount following the ITC's section 22 investigation (see footnote 51 above).

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[51] Requests for relaxation of the import quota have typically arisen from U.S. producers of peanut butter and other processed nut products. Presidential proclamations which temporarily increased the quota amount were in effect in 1955, 1956, 1980, and 1991. For additional background on both the U.S. domestic peanut program and the import quotas, see USITC, *Peanuts: Report to the President on Investigation No. 22-52 Under Section 22 of the Agricultural Adjustment Act, as Amended*, USITC publication 2369, Mar. 1991, pp. A-2 through A-16.

Table 4-7
Peanuts (farmers' stock basis[1]): Summary data, crop years 1991/92-93/94

Item	1991/92	1992/93	1993/94
Production (million dollars)	1,394	1,285	1,031
Production (million lbs., in-shell)	4,927	4,284	3,392
Imports[2] (million lbs., in-shell)	5	2	2
Exports (million lbs., in-shell)	997	951	555

[1] The term "farmers' stock peanuts" refers to picked and threshed peanuts that have not been shelled, crushed, cleaned, or otherwise changed (except for the removal of foreign material, loose shelled kernels, and excess moisture) from the form in which they are customarily marketed by producers.

[2] Excludes imports of peanut butter and peanut paste.

Source: Compiled from official statistics of the U.S. Department of Agriculture.

Economic Effects of Removing the U.S. Peanut Import Quota

The estimated tariff equivalents for peanuts and the U.S. and world prices for peanuts are reported in table 4-8. These tariff equivalents are estimated using the price-gap method. Most peanuts sold in world trade are shelled because of economies of scale in shipping and world prices are specified on a shelled basis. The U.S. quota support price is specified in terms of farmers' stock (in-shell). Comparison of the in-shell support price with the shelled world price requires the construction of a shelled support price or the construction of an in-shell world price. The prices presented in table 4-8 reflect these constructions when appropriate.[52]

Price Data

The world price used in estimating the economic effects of the peanut import quota is the simple average of monthly prices for U.S. shelled medium runner peanuts quoted c.i.f, Rotterdam, over the August 1993 through July 1994 crop year, adjusted for transportation costs from the United States to

[52] See appendix E for details on the tariff equivalent calculated for peanuts.

Europe. The U.S. price used is the average farm price for edible peanuts. The former price is on a shelled basis while the latter is on a farmers' stock basis, so comparison can be made only after they are put on the same basis. For example, to construct the support price on a shelled basis, the formula in table 4-9 is used.

To construct the "world" in-shell price in the United States, first, an estimate of shipping costs from the U.S. to Europe of 6.6 cents per kilogram was subtracted from the simple average c.i.f. Rotterdam price for U.S. medium shelled runners of $1,156.67 per metric ton.[53] Then the formula in table 4-9 was reversed to construct an in-shell price of 26.0 cents per lb. from a shelled price.[54]

[53] The simple average of monthly prices in Rotterdam was computed from United States Department of Agriculture, Foreign Agriculture Service, *Oilseeds and Products Report.*

[54] Other researchers have attempted to estimate the effects of U.S. peanut import quotas using methods which take into account differences in quality between U.S. and foreign peanuts as perceived in the marketplace. (David G. Raboy and Teri Simpson, "A Methodology for Tariffication of Commodity Trade In the Presence of Quality Differences - The Case of Peanuts", *The World Economy*, vol. 15, No. 2 (Mar. 1992), pp. 272-281.) After investigating this method, it was decided to compare the

Table 4-8
Peanuts: Prices and tariff equivalents, crop year 1993/94[1]

	Price		Tariff equivalent	
	World	**U.S.**	**Specific**	**Ad valorem**
	— Cents per lb —		Cents/lb	Percent
Shelled	52.4	56.0	3.6	6.8
In-shell	26.0	30.4	4.4	16.9

[1] Based on price of U.S. peanuts in Rotterdam and U.S. farm price for edible peanuts. See appendix E for details.

Source: Computed by USITC staff. Price data provided by U.S. Department of Agriculture, Foreign Agricultural Service.

Table 4-9
Shelled U.S. peanuts: Constructed U.S. domestic market price, crop year 1993/94

U.S. average farm price[1]	Less volume loss from shelling[2]	Less volume loss from culling[3]	Plus cost of shelling, culling, etc.[4]	Equals constructed U.S. price of shelled peanuts
(cents/lb)		——— (cents/lb) ———		
30.4 x	1.333 x	1.136 +	10.0 =	56.0

[1] Farmers' stock basis.
[2] Shelling loss estimated to be 25 percent (multiply by 1.333).
[3] Culling loss estimated to be 12 percent (multiply by 1.136).
[4] Costs are estimated as 10 cents per lb. (add 10 cents per lb.).

Source: USDA, Economic Research Service. Formula from USITC, *Estimated Tariff Equivalents of U.S. Quotas on Agricultural Imports and Analysis of Competitive conditions in U.S. and Foreign Markets for Sugar, Meat, Peanuts, Cotton, and Dairy Products*, USITC publication 2276, Apr. 1990.

Modeling and Estimates

A partial equilibrium model is used to evaluate the welfare effects of removing the U.S. import quota on peanuts because the peanut sector is too small to be identified in the USITC model.[55] The estimated economic welfare effects of removing the peanut import quota are shown in table 4-10. The gain to consumers of paying the world price for peanuts consists of two parts: (1) the value to the consumer of the lower price paid for peanuts at the current level of consumption, which is equal to the transfer from producers to consumers, and (2) the value in excess of the world price to consumers of the additional peanuts they would consume at the world price but not at the higher domestic support price—the deadweight loss recovered.[56] To illustrate (1), consider that in crop

year 1993/94 domestic consumption of peanuts for food uses was reported by USDA to be 2,088 million pounds (farmers' stock basis). Multiplying this consumption by the 4.4 cents per pound tariff equivalent yields $92 million in consumer savings. To illustrate (2), it is estimated that an additional 46 million pounds of peanuts would be consumed at the lower price than at the higher price. The value to consumers of this additional consumption is estimated to be $1 million. The producer loss is the difference between the support price and the world price times the current sales for food use at the support price. This is identical to part (1) of the consumer savings—$92 million.[57] No downstream effects are estimated because data on the retail value of peanut products or on employment in the peanut-processing industry were not available.

By comparison, the Commission's 1993 *Import Restraints* report estimated the effects of peanut import restraints for crop year 1991/92 to be substantially larger.[58] The primary reason for the drop in the estimate is that 1993/94 was a bad harvest year for U.S. peanut farmers. Production dropped by over 31 percent from the 1991/92 level, from 4,927 million pounds to 3,392 million pounds. This had the effect of lowering U.S. peanut exports by over 44 percent. As the United States is an important

[54]—*Continued*
price of U.S. peanuts in the U.S. market with the price of U.S. peanuts in the Rotterdam market as described above. There are substantial sales of U.S.-grown peanuts both in the Rotterdam and in the U.S. markets, and any market impact of the peanut import quota would be observable in the U.S. price. There are fairly few transactions of imported peanuts into the U.S. for each country. Also, a substantial quantity of peanuts imported into the United States in 1993 are recorded as exports from Singapore; these may represent U.S.-grown "additional" peanuts exported and re-imported, making their pricing particularly problematic.

[55] The partial equilibrium model is illustrated in appendix E.

[56] The gain to consumers of paying the world price of peanuts is measured by the change in what economists call consumer surplus. Consumer surplus is the difference between what consumers would be willing to pay for a product and the price they actually pay. See appendix E for an illustration of this concept. For an intermediate level discussion of consumer surplus, see Jack Hirshleifer,

[56]—*Continued*
Price Theory and Applications (Englewood Cliffs, NJ: Prentice Hall, 1984). For a more advanced discussion, see Hal Varian, *Microeconomic Analysis* (New York: W.W. Norton and Company, 1978).

[57] See appendix E for more details on this analysis.

[58] The tariff equivalent was estimated to be approximately 15.3 cents per pound, the additional consumption of peanuts under liberalization to be 209 million pounds, the transfer from consumers to producers to be $337 million, and the deadweight loss to be $16 million.

Table 4-10
Peanuts: Economic welfare effects of removing the quota, crop year 1993/94

(Million dollars)

Item	1993/94
Consumer benefit:	
Transfer from producers	92
Deadweight loss recovered	1
Total consumer benefit	93
Producer loss	92

Source: Estimated by the staff of the U.S. International Trade Commission.

exporter, this meant that the world price of peanuts rose substantially while the U.S. price, tied closely to the quota price in the price support program, remained relatively stable. The estimated tariff equivalent, based on the gap between the U.S. and world prices, thus fell. It is probable that had 1993/94 been a more normal harvest year for U.S. peanut farmers, the estimated effects of U.S. peanut import restraints on the U.S. peanut market would have been larger.

Provisions of the Uruguay Round Agreements Impacting the Peanut Sector

As required by the Uruguay Round Agreements, the previous section 22 quota of 775.18 metric tons (shelled basis) on imports of peanuts and certain peanut products[59] has been replaced by a tariff-rate quota. Starting April 1, 1995, imports of peanuts and certain peanut products, from countries other than Mexico, are subject to a tariff-rate quota of 30,393 metric tons for the year beginning April 1. The above tariff-rate quota will increase to 53,406 metric tons by the year 2000. The rates of duty on imports within the quota limitation[60] are substantially below the rates of duty for imports above the quota.[61] The above rates of duty are scheduled to be reduced by approximately 15 percent over the next 6 years.[62]

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[59] HTS subheadings 1202.10.40, 1202.20.40, 2008.11.25, and 2008.11.45.

[60] 6.6 cents/kg for shelled peanuts (1202.20.40) and certain peanut products (2008.11.25 and 2008.11.45) and 9.35 cents/kg for in-shell peanuts (1202.10.40).

[61] The above-quota tariff rates in 1995 are 151.1 percent ad valorem for shelled peanuts and certain peanut products and 187.9 percent for in-shell peanuts.

[62] Imports of peanuts and certain peanut products from Mexico are not subject to the above tariff-rate quota. However, imports from Mexico are subject to a tariff-rate

Starting January 1, 1995, imports of peanut butter and peanut paste, which were not previously subject to section 22 import restrictions, were subject to a tariff rate quota of 19,150 metric tons for the year beginning January 1, increasing to 20,000 metric tons over 6 years.[63] For 1995, imports within the tariff-rate quota limitation (2008.11.05) are dutiable at 1.9 cents per kilogram, to be reduced to zero within 6 years, and imports over the limitation (2008.11.15) are dutiable at 151.1 percent ad valorem, to be reduced gradually to 131.8 percent over a 6-year period.

The Effects of the First-Year Uruguay Round Changes[64]

Since the Uruguay Round Agreements simultaneously require modification of the import

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[62]—*Continued*
quota under NAFTA. The tariff rate quota level for 1995 is 3,478 metric tons, and will increase annually through 2007. Beginning in 2008, imports from Mexico will not be subject to tariff-rate quota limitations. Imports from Mexico enter duty-free within the quota limitation, but quantities above the quota limitation are subject to the higher rate of duty.

[63] Imports of peanut butter from Mexico are not subject to the Uruguay Round tariff-rate quota limitation, but are subject to provisions of NAFTA.

[64] USITC publication 2790, *Potential Impact on the U.S. Economy and Industries of the GATT Uruguay Round Agreements*, June 1994, pp. II-39 and II-40, estimated that the effect of the Uruguay Round Agreements on the oilseeds sector would include a small increase in imports, a negligible decline in the balance of trade, and negligible declines in production and employment. These results are not directly comparable to those presented here for reasons stated in chapter 1. In addition, the oilseeds sector modeled in the 1994 report includes soybeans, vegetable oil, fats, peanut butter and other products in addition to peanuts.

The effects on imports and production in the 1994 report are qualitatively consistent with those presented here.

restraints on peanuts and certain peanut products and allow imposition of new restraints on peanut butter and peanut paste, the effects of these agreements depend upon the interactions between the upstream peanut farmers and the downstream manufacturers of peanut butter and peanut paste. Since no data were available on market values of peanut butter and peanut paste, no quantitative estimate of the effects of the Uruguay Round Agreements was made.

Cotton

Cotton remains one of the largest field crops in the United States in value terms. The U.S. produced an estimated 23 percent of world output and 33 percent of world exports in the 1994/95 crop year;[65] this country is projected to be the world's largest exporter, and second-largest producer and consumer (after China). In 1993, the United States was the second largest producer after China. Uzbekistan led the U.S. as an exporter in 1992/93. Table 4-11 presents data on production and trade in cotton for the years 1991-93.

Operation of the U.S. Cotton Program

U.S. cotton policy, including the cotton import quota system, was established by the Food Security Act of 1985 and the Food, Agriculture, Conservation, and Trade Act of 1990, although cotton has been a matter of public policy since before the Civil War. Under the acts in place in 1993, import quotas have operated in conjunction with marketing loans and certificates to support the incomes of cotton

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[65] International Cotton Advisory Committee, Cotton: Review of the World Situation, July-August 1995.

producers.[66] In recent years imports of cotton have been negligible. According to the cotton industry, this is due in part to the success of the cotton programs in assuring the competitiveness of U.S. cotton in world markets, to generally higher and more consistent quality and packaging of U.S. cotton, and also to the booming global demand for cotton, particularly in China.[67] Because cotton import quotas were set at such low levels on a country-by-country basis, they can have a chilling effect on imports without being filled. This is because it is perceived that such small quotas cannot be profitably exploited; the existence of a price gap between world and domestic cotton prices is evidence that the quotas are in fact binding, although not completely filled. The effects of removing the quotas are therefore analyzed below.[68]

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[66] For a more complete description of the cotton programs, see Harold Stults et al, Cotton: Background for 1990 Farm Legislation, Economic Research Service, U.S. Department of Agriculture, 1990. See also the predecessors of this report: USITC, The Economic Effects of Significant U.S. Import Restraints, Phase II: Agricultural Products and Natural Resources, USITC publication 2314, Sept. 1990, and The Economic Effects of Significant U.S. Import Restraints, USITC publication 2699, Nov. 1993, Washington DC.

[67] Mark Lange, Director of Economic and Information Services, National Cotton Council of America, telephone interview by USITC staff, Aug. 31, 1995.

[68] Because imports have historically been very small and quotas have been undersubscribed, because U.S. cotton is competitive in world markets, and because imports were significantly higher, the predecessor of this report stated that the quotas were non-binding and had no effect. USITC, The Economic Effects of Significant U.S. Import Restraints, USITC publication 2699, Nov. 1993.

Table 4-11
Cotton: Selected U.S. sector data, 1991-93

Item	1991	1992	1993	Percentage change, 1991-93
Acreage[1] (1,000)	14,052.0	13,240.0	13,660.0	-2.8
Trade data (million dollars):				
Production	4,912.2	4,250.4	4,247.0	-13.5
Exports	2,479.8	1,998.6	1,527.6	-38.4
Imports	3.5	0.3	0.4	-88.2
Trade balance	2,476.3	1,998.3	1,527.2	-38.3

[1] Acreage data are used instead of employment data and production data are used instead of shipment data because they are more meaningful for an agricultural commodity.

Note.—Percentage changes are based on rounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Likely Impact of Cotton Quotas on U.S. Trade

In 1993, the United States imported about $356,000 of cotton from India and Pakistan; imports from Mexico were negligible. The import penetration ratio of U.S. imports of cotton is minimal; in 1993 all cotton imports were within the section 22 quotas. The URA is not expected to have any effect on the geographic distribution of cotton production. Nor is the URA expected to have any impact on regions which remain leading world cotton suppliers and producers. Aside from the U.S., the only NAFTA participant that is a cotton producer and consumer of note is Mexico (Canada produces no cotton).

The tariff-rate quotas are expected to continue discouraging U.S. imports, because (1) the tariff rate for above-quota cotton is prohibitive, (2) there is continued uncertainty involved in importing a product which may or may not be within quota upon arrival at U.S. Customs, and (3) some of the country-specific quota allotments are not commercially viable.

The Economic Effects of Liberalizing the U.S. Cotton Sector

Model Specification

The quantitative analysis presented here simulates the removal of cotton quotas for the year 1993. The CGE model specifically includes the cotton sector; the Commission's experiment simulates the removal of a tariff equivalent of the cotton quotas on this sector, as well as on several sectors upstream from cotton, which supply the cotton industry with many of its inputs, and on three downstream sectors that absorb most of the output of cotton. Upstream sectors include fertilizer, agricultural services, irrigation, maintenance, and transportation. The downstream sectors are oilseed, yarns and fabrics, and household furnishings.

The effects of the quotas in 1993 are estimated by means of an equivalent ad valorem tariff, as described in chapter 7. Data exist for both domestic and world prices; domestic prices are collected by USDA and by the National Cotton Council, and world prices (c.i.f. Northern Europe) are collected by Cotton Outlook of Liverpool, United Kingdom. Quotas are applied to three distinct categories of cotton, but essentially all imports in 1993 were of a medium grade of cotton generally equivalent to what is referred to as

Orleans/Texas "B" index cotton. Prices for such a cotton, designated as grade 4133, were $1.19 per kilogram in the U.S. spot market and $1.24 in Northern Europe. After adjusting for transportation and marketing costs, a price gap of between 10.58 and 26.05 cents per pound was estimated.[69] This is equivalent to an ad valorem rate of 11 to 27 percent; the higher limit was used in the experiment. In fact, as is stated below, imports rise by a substantial percentage in this model with the removal of the import quota, but from a very small base.

The Effects of Removing the U.S. Cotton Quotas

The overall effect of removing the cotton quota is a welfare gain of 0.3 million dollars. Contributing to this is the effect of slightly lower prices in cotton and in oilseed, yarn and fabric, and house furnishings sectors, though none of these sectors has a price decrease of more than one-tenth of a percent. The price of imported cotton would drop by 21 percent, but this represents a minute segment of the cotton market; domestic cotton prices would decrease negligibly. Cotton imports would rise by an estimated 13 percent, and domestic employment in cotton would not be expected to change appreciably.[70]

Key Uruguay Round Provisions Affecting Raw Cotton

The pre-URA U.S. calculated trade weighted duty for the raw cotton sector was 6.6 percent on an ad valorem equivalent basis. Under the URA, this rate will be reduced by about 1 percentage point. Prior to the URA, U.S. import tariffs on raw cotton ranged from free to 4.4 cents/kg, according to the staple

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[69] The USDA identifies a marketing cost of 14.01 cents per pound (30.8 cents per kilogram) as a marketing cost needed to move the cotton from the U.S. market to Europe. Of this, 15.4 cents per kilogram represents transportation to Europe. Since not all potential suppliers to the U.S. participate in the European market, and many shipments come from other locations, the lower bound of the price gap is derived by assuming a zero transportation cost. For details on the calculation methodology, see USITC, *Estimated Tariff Equivalents of U.S. Quotas on Agricultural Imports and Analysis of Competitive Conditions in U.S. and Foreign Markets for Sugar, Meat, Peanuts, Cotton, and Dairy Products*, USITC publication 2276, Apr. 1990.

[70] Results by sector are not tabulated because no results are greater than $1 million or one-tenth of 1 percent.

length.[71] No over-quota imports were permitted. Cotton could also be imported into the United States free of duty under the provisions for the Caribbean Basin Economic Recovery Act (CBERA), U.S.-Israel Free Trade Area (USIFTA), and the Andean Trade Preference Act (ATPA), but imports under these trade agreements were nil.[72]

The URA does not require any modifications in the domestic aspects of the U.S. cotton program, and overall domestic support levels for cotton will not have to be reduced. However, there are a number of URA provisions which will be of particular importance to cotton. Table 4-12 shows the schedule of quotas and above-quota tariffs under the URA.

Access to the U.S. market under the URA rises from the pre-URA cumulative quota of about 124,000 bales.[73] The URA required that the U.S. convert its section 22 quotas to a tariff-rate quota (TRQ) for the

World Trade Organization (WTO) members. Under the TRQ, the within-quota imports rise in 1995 to 238,000 bales, or 3 percent of the 1986-88 base period of U.S. domestic consumption. By the year 2000, this within-quota quantity will have risen in equal installments to 397,000 bales or 5 percent of base year consumption. U.S. tariff rates for raw cotton imports depend on whether imported volumes are above or below quota levels. Within-quota imports will be subject to the existing tariff rates. For over-quota cotton imports, URA tariff rates of 36.9 cents/kg will be imposed in 1995. These tariffs for over-quota raw cotton will be reduced under the URA by the minimum 15 percent to 31.4 cents/kg by the year 2000.[74]

Under the URA the initial quota volumes are allocated according to the following conditions: (1) 45,830 bales are allocated to Mexico; (2) volumes equal to the former section 22 quotas are allocated to countries having a section 22 quota; and (3) the remainder of the quotas are allocated to all countries on a first-come, first-served basis.

The section 22 cotton quotas went largely unfilled because the quantities allotted were generally too small to be commercially viable for exports. The URA TRQs are not expected to be filled either, for the same reason. Since the URA effects on the quota system are considered at least initially to be zero, separate effects of the Agreement are not estimated.

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[71] Pre-URA tariff rates for raw cotton under section 22 quotas were specified in HTS subheading 9904.30.10.

[72] A previous USITC study of the Uruguay Round Agreements found that the Agreements would be likely to have a negligible effect on trade. USITC, *Potential Impact on the U.S. Economy and Industries of the GATT Uruguay Round Agreements, Volume I*, USITC publication 2790, June 1994.

[73] Based on the total quota number of bales (of 218 kg each) listed in pre-URA HTS subheadings 9904.30.10 through 9904.30.40. The cumulative quota breaks down into three quotas: 6.6 million kg, or 30,204 bales, of cotton with a staple length under 28.575 mm (country specific quotas); 2.8 million kg, or 12,621 bales, for staple lengths 28.575 mm to 34.925 mm (general quota); and 17.6 million kg, or 80,725 bales, of cotton with a staple length of over 34.925 mm (general quota). Staple lengths indicate the overall fiber length.

[74] Cotton prices can be expected to vary over time and by grade, and there are no reliable projections of prices, but at recent levels of about $1.60 per kilogram, a duty of 36.9 cents/kg is equivalent to 23 percent ad valorem and 31.4 cents/kg is 19 percent ad valorem.

Table 4-12
Cotton: URA provisions, section 22 quota

Year	Quota amount	Above quota tariff
	(480-lb bales)	*(percent ad valorem)*
1995	237,980	16.74
1996	269,711	16.24
1997	301,442	15.74
1998	333,173	15.24
1999	364,904	14.74
2000-2002	396,634	14.24
Percent change, 1995-2002	67	-15

CHAPTER 5
Services

Service industries conduct international transactions either by sending people, information, or money across national borders, or by performing services for foreign entities through affiliates located overseas. The U.S. balance of payments reports transactions of the first type as exports and imports, and reflects transactions through affiliates in the investment income accounts. In the United States, the volume of trade in services grew by an average annual rate of 12.8 percent during 1987-92, the latter being the latest year for which comprehensive data are available. Cross-border exports and sales by foreign-based affiliates of U.S. firms rose on average by 11 percent a year during the period, whereas cross-border imports and purchases from U.S.-based affiliates of foreign firms increased by nearly 15 percent a year. In 1992, the United States posted a cross-border trade surplus of $60.2 billion and a surplus on affiliate transactions of $14.6 billion.

U.S.-based affiliates of foreign firms accounted for 55 percent of U.S. service imports in 1992. This reflected significant growth since 1987, when such affiliates accounted for 46 percent of the total.

The U.S. market is generally open to trade in services. Although foreign providers of some services do face constraints on operations in the United States, most of these constraints stem from regulations also applicable to domestic firms. With respect to regulation, "national treatment" is not considered a barrier to trade. For example, requirements that foreign financial firms maintain assets in the United States if they want to operate in the United States are not considered discriminatory so long as U.S. firms face the same requirements. The only significant discriminatory restrictions on imports of services, in terms of their impact on foreign participation in the U.S. market, are restrictions on the foreign provision of transportation services in the United States (air and maritime transport).

Maritime Transport

Import competition in the U.S. domestic maritime market is restricted through the Merchant Marine Act of 1920, commonly referred to as the Jones Act.[1] This act effectively reserves U.S. maritime cabotage (domestic point-to-point service) for ships that are registered and built in the United States and that are owned and crewed, predominantly, by U.S. citizens.[2] The United States restrains imported shipping services for U.S. international cargo trade through a series of cargo preference requirements.[3] In addition, numerous other restrictions apply to (1) the foreign ownership of U.S.-registered ships; (2) the

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[1] Most countries reserve cabotage (domestic point-to-point service) for domestic providers.

[2] Numerous exemptions to the Jones Act exist. In terms of the volume of cargo affected, the largest general exemption applies to merchandise that is transported between the U.S. Virgin Islands and other U.S. ports. This cargo may be carried by foreign-flag carriers. Another general exemption applies to foreign-built U.S.-flag ships, which are allowed to carry cargo between Guam, other U.S. Pacific possessions, and U.S. ports. In addition, under a variety of circumstances, individual waivers to the Act are granted to foreign and U.S. vessels that are not protected by the Act. A rider to the 1996 Coast Guard reauthorization bill would repeal the need for Jones Act coastwise endorsements for vessels operating on routes between the United States and Canada. U.S.-flag vessels operating on these routes would be required to have a certificate of documentation and registry endorsement.

[3] In addition to the Jones Act, there are two other statutes that reserve transport of certain types of U.S. domestic cargo to U.S.-flag vessels. The Export Administration Act (50 U.S.C., app., 2406(d)) prohibits the export of Alaskan oil and, in effect, reserves this cargo for U.S. vessels. Section 4 of the Outercontinental Shelf Lands Act of Aug. 7, 1953 (43 U.S.C. 1333 and 1346), reserves the supply of offshore drill rigs and other exploration activities to U.S.-flag vessels.

citizenship of U.S. crews on U.S.-flag ships; and (3) dredging, towing, or salvaging operations in the United States by foreign vessels. With the exception of the Jones Act, most of the restrictions listed above are too complex to represent in the CGE model; therefore, this analysis provides a quantitative assessment only of the economic costs of Jones Act restrictions on domestic shipping.

At the close of the Uruguay Round, negotiators were unable to reach agreement regarding the extent to which maritime transport services would be addressed in the General Agreement on Trade in Services (GATS). Consequently, the United States withdrew its offer, and the U.S. Schedule of Commitments, which specifies U.S. commitments for service industries, does not address maritime transport services. Measures at issue in the maritime transport discussions, such as the Jones Act, therefore remain in place. While other sector studies in this report have included an analysis of the impact of provisions in the Uruguay Round Agreements, there are no relevant provisions applying to Jones Act shipping. However, a GATT Ministerial "Decision on Negotiations on Maritime Transport Services" provides for continuing voluntary negotiations regarding maritime transport services, with a report due no later than June 1996. The Decision specifies that these negotiations should be comprehensive, and should result in "the elimination of restrictions within a fixed time scale."[4]

Current Operation of the Jones Act[5]

The current cabotage prohibition on foreign vessels is covered in section 27 of the Merchant Marine Act of 1920, which states that no merchandise transported by water between U.S. ports is to be carried "in any other vessel than a vessel built in and documented under the laws of the United States and owned by persons who are citizens of the United

States."[6] Ships operating on routes covered by the Jones Act are prohibited from receiving operating and construction subsidies that other U.S.-flag ships may receive.

Cargo carried on routes covered by the Jones Act, including oceanborne (coastal and intercoastal), lakewise, and inland shipping, totaled about $6.7 billion in 1993. Oceanborne cargo accounted for nearly 50 percent of this trade (see table 5-1).[7] The dominant share of Jones Act cargo consisted of liquid-bulk shipments of petroleum and petroleum-based products. By law, Alaska North Slope oil could not be exported, and it could not be transported by foreign ships to domestic markets.[8] Thus this cargo was effectively restricted to Jones Act trade. Legislation passed by Congress in 1995 repeals the export ban on Alaska North Slope oil. The Alaska Power Administration Sale Act requires that any U.S. oil be carried on U.S. vessels crewed by U.S. merchant mariners. However, the legislation does not contain a U.S.-built vessel provision.

Economic Effects of Removing the Jones Act Restrictions

The USITC CGE model divides the U.S. economy into 14 sectors in addition to the 9 aggregate sectors that account for the rest of the U.S. economy. The highlighted sectors include the cabotage and water transportation sectors, which are directly affected by the Jones Act, and those sectors that have significant upstream or downstream linkages to cabotage services or to petroleum and refined petroleum products, as well as to other transportation sectors.

A few studies have estimated the economic costs of the Jones Act for a given year. The Congressional Budget Office found that the Jones Act imposed a $1.3 billion cost on the U.S. economy in 1983.[9] A study conducted by White estimated the costs to be $2 billion in 1984.[10] Using a partial equilibrium

[4] Office of the United States Trade Representative, *Final Texts of the GATT Uruguay Round Agreements Including The Agreement Establishing The World Trade Organization* (Washington, DC: U.S. Government Printing Office, 1994), p. 412.

[5] This section is based largely on Lawrence J. White, *International Trade in Ocean Shipping Services: The United States and the World* (Cambridge, MA: An American Enterprise Institute/Ballinger Publication, 1988). For a more detailed discussion of the Jones Act, see U.S. International Trade Commission (USITC), *The Economic Effects of Significant U.S. Import Restraints, Phase III: Services*, USITC publication 2422, Sept. 1991.

[6] 46 U.S.C. 883.

[7] The Jones Act also prevents foreign cruise vessels from transporting passengers between U.S. ports and restricts foreign access to U.S. river and canal traffic. The effects of the Jones Act on the passenger market, and on river, canal, and lakewise traffic are not addressed in this analysis.

[8] These restrictions are found in the Export Administration Act and the Trans-Alaska Authorization Act of 1973.

[9] Congressional Budget Office, *U.S. Shipping and Shipbuilding Trends and Policy Choices* (Aug. 1984).

[10] Lawrence J. White, *International Trade in Ocean Shipping Services: The United States and the World* (Cambridge, MA, American Enterprise Institute/Ballinger Publication, 1988).

Table 5-1
U.S. domestic waterborne cargo sector: Total revenue and employment, by types, 1991-93

Item	1991	1992	1993
Revenue *(million dollars)*:			
Oceanborne	3,214	3,215	3,218
Lakewise	564	568	552
Inland	3,011	3,005	2,975
Total	6,789	6,788	6,745
Employment *(workers)*:			
Oceanborne	11,905	11,952	10,764
Lakewise	2,272	2,291	2,063
Inland	15,440	14,768	13,728
Total	29,617	29,011	26,555

Source: Eno Foundation for Transportation, Inc., and U.S. Bureau of Labor Statistics.

analysis, the USITC found that the cost to the U.S. economy in 1989 ranged from $3.6 billion to $9.8 billion.[11] Also using partial equilibrium analysis, Hufbauer and Elliott estimated a net cost to the economy of $1.1 billion in 1990.[12] They assumed that with repeal of the Jones Act, foreign shippers would capture half the coastwise cabotage trade, but less than half of inland shipping. In contrast, the general equilibrium analysis conducted by the ITC for 1991, which deals only with oceanborne cargo, shows the domestic oceanborne Jones Act fleet shutting down completely with its services replaced by imports.[13] The welfare gain from Jones Act removal in that analysis was $3.1 billion.

The current CGE simulation, like the one cited above, deals only with oceanborne cargo. However, substantial domestic production is retained, indicating that domestic shippers may continue to operate using imported ships under national rather than Jones Act labor laws. Inland shipping was not treated in the model simulation because domestic inland shippers are considered to be efficient in this market, as indicated by U.S. exports of inland waterways vessels, the main tradable component of costs in inland shipping.[14] Therefore, inland shipping was included in the other water transportation sector.

[11] USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase III: Services*, publication 2422, Sept. 1991.

[12] Gary C. Hufbauer and Kimberly A. Elliott, *Measuring the Costs of Protection in the United States* (Washington DC: Institute for International Economics, 1993).

[13] USITC, *The Economic Effects of Significant U.S. Import Restraints*, USITC publication 2699, Nov. 1993.

[14] Information obtained from interviews with domestic industry experts in the course of this investigation.

The effects of the Jones Act on oceanborne cabotage services are estimated here by introducing the possibility of importing cabotage services at a price indicated by the U.S.-world price-gap for shipping services. This is calculated as the output-weighted average difference between the U.S. and world prices for shipping the two main types of cargo transported: "wet-cargo," which consists mostly of petroleum bulk cargos, and "dry-cargo," which consists of liner and nonliquid bulk cargos.[15] The tariff equivalent estimated for this analysis is 89 percent.[16]

[15] Cabotage output was measured in terms of ton-miles, i.e., the number of ton-miles for wet- and dry-cargo in the U.S. domestic market. The dry-cargo premium was taken from previous estimates used in USITC, *The Economic Effects of Significant U.S. Import Restraints, Phase III: Services*, publication 2422, Sept. 1991. U.S. and world prices for transporting "wet," or petroleum cargo, were obtained from the State of Alaska; Worldscale Association, *New Worldwide Tanker Nominal Freight Scale* (Worldscale Association: London, 1993) and Drewry Shipping Consultants, *The International Oil Tanker Market: Supply, Demand and Profitability to 2000* (Drewry: London, Apr. 1994).

[16] The tariff equivalent estimated for the Jones Act restrictions, 89 percent, is a weighted average of wet- and dry-cargo tariff equivalents. The wet-cargo tariff equivalent is weighted by the portion of cabotage trade in crude petroleum, 90 percent. The dry-cargo tariff equivalent is weighted by its portion of cabotage trade, 10 percent.

The tariff equivalent for wet cargo, 89 percent, was based on the weighted average of two price gaps. The first price gap, 86 percent, is the difference between the average U.S. price for shipping Alaskan North Slope (ANS) crude petroleum to the U.S. West Coast and the average world price for a comparable tanker shipment transported an equal distance. This gap is weighted by the portion of ANS shipments to the U.S. west coast, 85 percent. The second price gap, 163 percent, is the

The economywide effect of removing the Jones Act is a U.S economic welfare gain of approximately $2.8 billion. This figure can also be interpreted as the annual reduction in real national income imposed by the Jones Act. A primary reason for the large gain in welfare is a decline of approximately 26 percent in the price of shipping services formerly restricted by the Jones Act. In addition, prices fall in the rest of the water transportation sector by 1 percent. Across the economy, removing the Jones Act results in a negligible gain in both employment and output.

Table 5-2 presents the estimated domestic employment, output, and trade effects of opening the cabotage sector to foreign competition. Removal of the Jones Act reduces the domestic price of cabotage services, causing an increase in domestic demand for them. Imports rise by approximately $1 billion while domestic output falls by $0.75 billion or 23 percent,[17] with employment declining by 2,450 full-time equivalent jobs.[18]

The increase in demand for cabotage leads to higher demand for other water transport services. In the model simulation, output of these services expands by $600 million or 1 percent while employment in other water transport rises by 1,500 jobs. Since cabotage is an input to other water transport, production in that sector becomes cheaper and its price falls. Due to the decline in domestic price, imports in the water transport sector fall by $200 million (1 percent), whereas exports in water transport increase by $400 million, or by 2 percent.[19]

The removal of the Jones Act also brings about a decline in domestic shipbuilding; output and employment fall by small amounts. However, upstream maintenance and management services show small gains in output and employment as total cabotage services expand with the inflow of imports. Aside from the cabotage and water sectors, changes in output, employment, and trade in the remaining sectors were small in percentage terms, in most cases measuring less than 0.1 percent.

Air Transport

In the international marketplace, air transport is governed by (1) a network of bilateral agreements that regulate entry or directly restrict the competitiveness of foreign airlines; (2) domestic regulatory systems that effectively restrict entry of foreign carriers; (3) restrictions on ancillary domestic markets that impair a foreign carrier's ability to compete; and (4) subsidization and state ownership of competing foreign airlines. The Uruguay Round Agreements do not cover this sector and will have no effect on the operation of these nontariff barriers. Summary data for the air-transport sector are presented in table 5-3.

Recent Developments in International Air Services

Bilateral agreements between governments still govern air transport, both passenger and cargo. For some time, negotiators have tried to reach an accord that would liberalize Bermuda 2, the U.S.-British agreement. Talks were discontinued in December 1993, but were restarted in March 1995.

Officials are optimistic, some predicting an "open-skies" agreement.[20] In 1992 the Netherlands was the first European Union (EU) country to reach an open-skies accord with the United States. In February 1995, authorities in Switzerland and the United States announced a free market in aviation between those two countries.

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[16]—*Continued*
difference between the average U.S. price for ANS tanker shipments to the U.S. gulf coast and the average world price for a comparable tanker shipment transported an equal distance. This gap is weighted by the portion of ANS shipments to the U.S. gulf coast, 15 percent. The tariff equivalent for dry cargo, 10 percent, is based on estimates reported by Clinton H. Whitehurst, Jr., *American Domestic Shipping in American Ships: Jones Act Costs, Benefits, and Options* (Washington, DC: American Enterprise Institute, 1985).

[17] The cabotage sector includes not only cabotage trade (Jones Act fleet), but also other port services associated with cabotage trade.

[18] Since the base level of imports in the sector is zero, a certain initial level of imports must be assumed in order for the model to find a new equilibrium of domestic output and imports that corresponds with the lower world price for imported shipping services.

[19] The water sector includes all other services related to non-Jones Act activity such as international traffic between U.S. and foreign ports, dock and port services incidental to international traffic, dock workers' services, tug boat services, and other water-transport services.

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[20] U.S. officials are attempting to liberalize air cargo rights, and to expand landing rights for U.S. carriers in the United Kingdom. U.K. officials would like a higher limit on the amount of voting stock a foreign carrier may own in a U.S. airline. See Lisa Burgess, "With Eyes Trained on Air Cargo Rights, U.S. and U.K. Plan 2nd Round of Talks," *Journal of Commerce,* Knight-Ridder/Tribune Business News, Mar. 27, 1995.

Table 5-2
Jones Act: Economic effects of liberalization, 1991

Sector	Employment Number[1]	Employment Percent	Output Dollar[2]	Output Percent	Imports Dollar[2]	Imports Percent	Exports Dollar[2]	Exports Percent
Liberalized sectors:								
Cabotage	-2,450	-22.8	-745	-22.8	1,070	35.7	([6])	([6])
Other water transportation	1,489	1.0	556	1.0	-187	-0.9	417	2.0
Upstream sectors:								
Management/consulting services	139	([4])	57	([4])	4	0.1	9	-0.1
Maintenance and repair	27	([4])	33	([4])	2	0.1	-6	-0.1
Shipbuilding	-36	([4])	-6	([4])	([3])	([4])	([3])	-0.1
Downstream sectors:								
Chemicals	-189	([4])	-56	([4])	4	([4])	-18	([4])
Electric utilities	54	([4])	54	([4])	([3])	0.1	([3])	([4])
Logging, sawmills, and millwork	-255	([4])	-48	([4])	12	([4])	-19	-0.1
Petroleum refining and petroleum products	-85	([4])	-41	([4])	11	([4])	-3	([4])
Plastics	-358	([4])	-62	([4])	14	([4])	-28	([4])
Steel and steel products	-142	([4])	-37	([4])	2	([4])	4	([4])
Competing sectors:								
Air transportation	-379	([4])	-71	([4])	36	0.1	-53	-0.1
Pipelines	-2	([4])	([3])	([4])	([5])	([5])	([5])	([5])
Railroads	-44	([4])	-7	([4])	3	0.1	-4	0.2
Trucking	-29	([4])	4	([4])	2	0.1	([3])	0.1
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	-1,267	([4])	-231	([4])	6	([4])	-163	-0.5
Mining	-109	([4])	-2,788	([4])	4	0.1	-14	-0.2
New construction ...	-192	([4])	([3])	([4])	([5])	([5])	([5])	([5])
Nondurable manufacturing	-306	([4])	41	([4])	102	0.1	-47	([4])
Durable manufacturing	-4,101	([4])	-700	([4])	372	([4])	-284	-0.1
Other transportation, communications, and utilities	61	([4])	32	([4])	29	0.1	-22	-0.1
Wholesale and retail trade	2,955	([4])	274	([4])	([5])	([5])	([5])	([5])
Banking and other financial services	1,077	([4])	462	([4])	19	0.1	-24	-0.1
Real estate and other services	4,238	([4])	426	([4])	55	0.1	-94	-0.1

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.
[6] Not applicable since base level exports are zero.

Source: Estimated by the staff of the USITC.

Table 5-3
Air transport: Summary data, 1990-93

Item	1990	1991	1992	1993
Production (*billion dollars*)	39.8	41.4	46.0	([1])
Employment (*thousand workers*)	530	534	540	([1])
Exports (*billion dollars*)	17.5	18.4	19.4	19.2
Imports (*billion dollars*)	12.5	12.0	12.7	13.7

[1] Data are not available.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, and U.S. Department of Transportation, Federal Aviation Administration.

While EU nations continue to negotiate bilateral agreements with the United States, the European Commission is attempting to gain support for presenting a unified front in aviation negotiations. The U.S. Department of Transportation is nevertheless continuing to negotiate bilateral open-skies pacts with European countries. Talks with Belgium, Iceland, and Austria have been concluded; talks with Luxembourg are progressing, and negotiations with Norway, Sweden, and Finland began in April 1995. A new aviation agreement with Canada was also completed in February 1995.[21]

Foreign airlines have requested authority to exceed the 25-percent ownership share to which they are limited by law.[22] For example, British Airways originally petitioned to acquire 44 percent of USAir, but failed to get U.S. approval and had to scale back to a 24.6-percent share of voting stock.[23] British Airways has a code-sharing agreement in place with USAir, under which the two airlines have common flight numbers on certain flights and share these flights in their reservation systems, effectively allowing the carriers to share passengers.

On May 24, 1993, a special Commission established by Congress was empaneled. The mandate of The National Commission to Ensure a Strong Competitive Airline Industry (Airline Commission) was to recommend ways to revive that industry. The report of the Airline Commission addresses the impact of pricing policies, deregulation, bankruptcy laws, foreign investment, and government

noise regulation on the airline industry.[24] Among its recommendations are several that, if adopted, could in some cases improve the ability of foreign firms to enter the U.S. market. In addition, the Airline Commission concluded that the current system of bilateral agreements between major countries should be replaced with an open and comprehensive multinational system.

Banking, Insurance, and other Financial Services

Although foreign firms claim that the U.S. regulatory systems for the financial sector are unnecessarily unwieldy, overlapping, and expensive, foreign firms seem to be treated largely the same as domestic companies. Conclusion of the Uruguay Round Agreements will not affect current U.S. regulation. National treatment commitments will be enforceable through the WTO's dispute settlement mechanism: an interim accord on these provisions was reached in July 1995.

An exception to the above generalization, however, is the enforcement of certain provisions of the Foreign Bank Supervision Enhancement Act of 1991. Evidently enacted in response to concerns raised by the alleged fraudulent or illegal activities of foreign banks such as the Bank of Commerce and Credit International (BCCI) and Banca Nazionale del Lavoro (BNL), the act makes the Federal Reserve Board (FRB) the primary regulator for judging new foreign applications for branch, agency, or representative offices banking licenses.[25] Further, the

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[21] U.S Department of Transportation, *News: DOT Issues Final International Air Transportation Policy Statement* (Washington: Press Release DOT 72-95, April 25, 1995).

[22] Sec. 1301(3) of the Federal Aviation Act of 1958, 49 U.S.C. 1301(3).

[23] In February 1995, a bill was introduced in the U.S. House of Representatives Transportation and Infrastructure Committee that would enable the Department of Transportation to waive the 25-percent limit on foreign ownership at its discretion.

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[24] The National Commission to Ensure a Strong Competitive Airline Industry, *Change, Challenge, and Competition: A Report to the President and Congress* (Washington, DC: GPO, 1993).

[25] Applicants must also apply to the OCC or the States for their license, but the FRB must approve the

law mandates that the FRB use a very high regulatory standard in judging new applications, a standard known as comprehensive consolidated supervision (CCS). This is a lengthy process and reportedly has led to delays in the processing of new applications.[26] Both new applicants and some U.S. states have complained that the required procedures are unnecessarily onerous.[27] The overall effect of this measure on the U.S. economy and employment, however, is indiscernible; the applications allegedly delayed tend to come from smaller, less developed nations that are attempting to make initial entry into the U.S. market.[28]

In broader terms, some foreign insurance and banking firms have complained of other restrictions in the U.S. market, including the prohibition on universal banking, the inability to conduct branch operations in some States, the Federal excise tax on some insurance transactions for some foreign companies, the need to maintain trusteed assets within the United States, and the prohibition of the licensing of state-owned firms in some States. Addressing one of these concerns, it is likely that the 1994 passage of the Interstate Banking and Branching Efficiency Act will eventually alleviate some countries' concerns on the ability to open branch bank operations in most States.[29]

There is abundant evidence that foreign firms can enter the U.S. market. Over four hundred foreign-owned insurance companies, from 28 countries, operate in the United States. These firms write over $60 billion in direct premiums on an annual basis, representing a minimum of 10 percent of the total U.S. insurance market.[30] In the securities

market, there are 63 foreign companies, from 12 countries, that belong to the Securities Industry Association, with over $14 billion in investment capital.[31] In regard to foreign banking penetration of the U.S. market, there are currently 413 branches, 167 agencies, 91 foreign bank-owned subsidiaries, 6 investment companies, and 12 Edge Act Corporations licensed in the United States.[32] These companies have $872 billion in assets, or 21 percent of the total assets of the U.S. commercial banking system. In addition, there are about 250 representative offices of foreign banks in the United States.[33] Summary data for the financial services sector are presented in table 5-4.

Broadcasting

The major import restraint in broadcasting is a restriction on foreign ownership of radio, television, and wireless communication broadcasting licenses. This restriction is contained in the Communications Act of 1934.[34] The act states that broadcasting licenses may not be held by foreign individuals, foreign governments, or foreign corporations.[35] In addition, a corporation holding a radio or television broadcasting license cannot be controlled by another corporation that is more than 25 percent foreign owned. The Uruguay Round Agreements should have no effect on the restriction of foreign ownership of broadcasting licenses. The U.S. Schedule of Commitments maintains the current restriction.[36]

It is not possible to estimate the effect of removing these ownership restrictions. The number of commercial licenses remains restricted by the current allocation of the radio spectrum, and all existing licenses are owned. If additional bids for these licenses, or for the shares of the firms holding the licenses, were permitted from foreign parties, this

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[25]—*Continued*
initial request for entry to the U.S. market before the OCC or states may grant a license. Applications for subsidiary operations do not require this approval, since such companies become U.S. corporations.

[26] USITC staff conversations with U.S. Treasury officials, Apr. 4, 1995.

[27] See, for example, the report submitted by the Federal Reserve Board to Senator Alfonse D'Amato, entitled "Report on Applications Under the Foreign Bank Supervision Enhancement Act," Jan. 20, 1995.

[28] The MFN exemption listed by the United States in its final WTO financial services offer reserves the right to employ reciprocity in deciding which countries' firms can open new businesses.

[29] The MFN exemption listed by the United States in its final WTO financial services offer also reserves the right to employ reciprocity in deciding which countries' firms can take advantage of opportunities that will exist in interstate branching.

[30] National Association of Insurance Commissioners, statistical report to the United States Trade Representative's office, Dec. 1993.

[31] Securities Industry Association listing, Aug. 1993.

[32] Edge Act Corporations are chartered by the FRB to engage in foreign or international banking and financial operations.

[33] U.S. Department of the Treasury, *National Treatment Study, 1994*, p. 17.

[34] Sec. 310 of the Communications Act of 1934, 47 U.S.C. 310.

[35] Corporations with any foreign officers or directors are prohibited from holding broadcasting licenses, as are those wherein foreign entities hold or vote on 20 percent or more of capital stock.

[36] Office of the United States Trade Representative, *Results of the Uruguay Round Market Access Negotiations, Services: Vol. IV, United States Schedule of Commitments and List of MFN Exemptions* (Washington, DC: U.S. Government Printing Office, Apr. 1994), p. 48.

Table 5-4
Banking, insurance, and other financial services: Summary data, 1990-93

Item	1990	1991	1992	1993
Production (*billion dollars*)	341	377	407	(¹)
Employment (*thousand workers*)	5,269	5,211	5,159	(¹)
Exports (*million dollars*)²	4,389	5,135	4,857	8,519
Imports (*million dollars*)³	5,168	6,022	7,179	8,037

¹ Data are not available.

² For banking and securities, the figures reflect only brokers' fees and commissions, and certain bank fees (fee generated income). For insurance, the figures reflect net exports, i.e., premiums received from abroad, minus claims paid to foreign nonresidents.

³ For banking and securities, the figures reflect only brokers' fees and commissions. For insurance, the figures reflect net imports, i.e., losses recovered from foreign insurance firms, minus premiums paid by U.S. residents to those firms.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, various issues.

could cause some increase in the value of broadcasting firms. This does not constitute a convincing argument that existing restrictions have more than a slight or negligible effect on the actual level of competition and consumer welfare. Summary data for the broadcasting sector are presented in table 5-5.

Construction

With the expiration in October 1991 of the terms of the Brooks-Murkowski Amendment,[37] state licensing requirements for architects and engineers are

the only remaining barriers to trade in construction services. The Brooks-Murkowski Amendment prohibited countries designated by the United States Trade Representative as unfair traders in construction services from participating in construction projects funded by the U.S. Government.[38] This legislation has not been replaced. All States have professional licensing requirements for architects and engineers, but these requirements are not viewed as significantly impeding the ability of foreign firms to operate in the United States. The U.S. Schedule of Commitments effectively places no limitations on the provision of construction services by foreign firms. Summary data for the construction services sector are presented in table 5-6.

[37] The Brooks-Murkowski Amendment was an amendment to the Continuing Resolution for Fiscal Year 1988 and then to the Airport and Airways Improvement Act, which expired in October 1991.

[38] Japan was the only country to be designated as an unfair trader under this amendment.

Table 5-5
Broadcasting: Summary data, 1990-93

Item	1990	1991	1992	1993
Production (*billion dollars*)¹	24	27	28	(²)
Employment (*thousand workers*)	335	328	328	332
Exports (*million dollars*)³	104	67	88	171
Imports (*million dollars*)⁴	43	51	⁵605	33

¹ Data reflect radio and television broadcasting only.

² Data are not available.

³ Receipt of funds from foreign persons (e.g., individuals and companies) for the broadcasting of live performances or events.

⁴ Payment of funds to foreign persons (e.g., individuals and companies) for the broadcasting of live performances or events.

⁵ Increase in imports mainly due to U.S. broadcasts of 1992 summer Olympic games in Barcelona, Spain and the winter games in Albertville, France.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, various issues.

Table 5-6
Construction: Summary data, 1990-93

Item	1990	1991	1992	1993
Production (*billion dollars*)	240	223	222	(^{1})
Employment (*thousand workers*)	5,019	4,537	4,366	4,523
Exports (*billion dollars*)^2	44	69	72	61
Imports (*billion dollars*)^3	15	12	9	12

[1] Data are not available.

[2] Represents the value of contract awards for overseas projects to U.S. contractors for the specified year.

[3] Represents the value of contract awards to foreign contractors for projects in the United States for the specified year.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, various issues, and *Engineering News Record*, various issues.

CHAPTER 6
Significant Tariff Restraints

This chapter examines the effects of liberalizing sectors that are protected with significant tariff restraints. For the purpose of this study, significant tariff restraints exist in an industry that has either an ad valorem tariff rate in excess of 7.5 percent and $100 million in imports or tariff revenues of over $350 million or both.[1] With the exception of motor vehicles, the sectors analyzed here were not subject to quantitative restraints in 1993. Table 6-1 shows the sectors analyzed in this chapter, which are in terms of the Standard Industrial Classification (SIC) system, and their average ad valorem equivalent tariff rates, both on a c.i.f.[2] and a customs value basis, in 1993. These generally correspond to industry sectors in the Commission's model.

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[1] In USITC, *The Economic Effects of Significant U.S. Import Restraints*, Publication 2699, Nov. 1993, the high-tariff sectors were chosen based only on ad valorem tariff rates. In order to include a more representative sample of sectors affected by tariffs, the definition of high tariff was expanded for this report.

[2] The tariff rate based on c.i.f. represents the tariff rate that is being removed in the Commission's model.

Net economic welfare results for liberalization of each sector in this chapter are given in table 6-2 from largest to smallest. The largest gains from tariff removal in 1993 occur in the steel, nonrubber footwear, motor vehicle, and household audio and video equipment sectors, with net welfare gains of $162, $147, $122, and $98 million, respectively.

The largest net welfare gains do not necessarily correspond to the sectors with the highest tariff rates or highest tariff revenue. If there is a correlation between the net economic welfare change of removing the tariff and the attributes of the tariff removed, it concerns the size of the revenue generated by the tariff. Four of the top five sectors ranked by tariff revenue are among the top five when ranked by net welfare effects. These results indicate that the ad valorem rate is not as important in determining the size of the net welfare effect of tariff removal as the amount of tariff revenue or more generally the size of the sector. The number and size of upstream and

Table 6-1
Sectors with significant average MFN tariff rates, 1993

SIC No.	Sector description	Average MFN tariff rate based on		
		C.i.f. value	Customs value[1]	Tariff revenue
2037	Frozen fruit, fruit juices, and vegetables	15.1	25.8	167.2
28[2]	Industrial inorganic and organic chemicals	4.9	7.9	548.4
3021	Rubber and plastic footwear	26.1	29.0	368.9
314[3]	Nonrubber footwear	9.4	8.5	786.1
3151	Leather gloves and mittens	13.8	14.0	28.6
3172	Personal leather goods	8.0	8.9	27.3
3253	Ceramic wall and floor tile	17.1	19.1	643.5
3262	China tableware	12.2	13.0	37.5
3312	Blast furnaces and steel mills	4.4	4.7	373.3
3562	Ball and roller bearings	8.5	9.1	83.6
3651	Household audio and video equipment	3.8	4.3	500.5
3711	Motor vehicles and car bodies	2.0	3.2	1,227.1
3961	Costume jewelry and costume novelties	7.3	9.8	51.2

[1] Ad valorem equivalent, dutiable value basis.
[2] Includes SIC codes 281, 2865, and 2869.
[3] Includes SIC codes 3142, 3143, 3144, and 3149.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 6-2
Net economic welfare change from liberalization, by sectors, 1993

(Million dollars)

Sector	Economic welfare change
Blast furnaces and steel mills	162
Nonrubber footwear	147
Motor vehicles and car bodies	122
Household audio and video equipment	98
Industrial inorganic and organic chemicals	62
Ball and roller bearings	47
Ceramic wall and floor tile	41
Rubber and plastic footwear	40
Frozen fruit, fruit juices, and vegetables	24
Costume jewelry and costume novelties	11
China tableware	11
Personal leather goods	11
Leather gloves and mittens	6

Source: Estimated by the staff of the USITC.

downstream linkages[3] are important in determining the size of the net welfare effects. The change in the tariff and the resulting price of the product made by industries, like steel and motor vehicles, that have a number of downstream and upstream linkages are likely to have larger net welfare effects than a change in a product made by an industry that sells directly to the consumer. For example, even though the average tariffs on steel and household audio and video products are similar in terms of percentage and the tariff revenue generated by the tariff is larger for the household audio and video equipment sector, the net welfare effect of removing the tariff on steel is larger.

The smallest net welfare effects of removing tariff protection are on costume jewelry, china tableware, personal leather goods and leather gloves and mittens. This is to be expected since these sectors are small relative to the other sectors in the analysis and do not have a large number of sizeable downstream industries.

Eight sectors are common to the analysis in the 1993 *U.S. Import Restraints*, significant tariff restraints chapter, and this analysis. The net welfare

estimates for these eight sectors are similar between the two reports.[4]

The individual sector analyses in the rest of the chapter are presented in the following format: each sectoral analysis briefly discusses the products and their tariff rates, including any duty concessions agreed to by the United States in the Uruguay Round Agreements (URA). A summary data table is provided for each sector as a reference for evaluating the economic effects estimated by the Commission model. The estimated economic effects of removing the tariffs are then reported, including the quantitative and percentage changes in employment, output, imports, and exports. Due to the size of the United States' tariff cuts in these 13 sectors in 1995 brought about by the implementation of the URA, one combined experiment inclusive of all of the URA changes was performed. The estimates of the overall impact of changes in tariffs in 1995 for these 13 sectors are given at the end of the chapter after the individual analyses.

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[3] The definition of upstream and downstream linkages was a concern raised by "Comments on the Effects of Import Restraints on the Household Glassware Sector" a written statement submitted on behalf of Libbey, Inc. by the Law Offices of Stewart and Stewart, May 1995. Submissions by Anchor Hocking Glass and Indiana Glass concurred with the concerns raised by Libbey, Inc. The linkages are based on U.S. Bureau of Economic Analysis input-output tables.

[4] The eight sectors are nonrubber footwear, ball and roller bearings, ceramic wall and floor tile, frozen fruit, fruit juices and vegetables, costume jewelry, china tableware, personal leather goods, leather gloves and mittens. The net welfare effects of tariff removal on these eight sectors in the previous report, in the order given above are, $170 million, $45 million, $12 million, $13 million, $42 million, $2 million, $7 million, $2 million. For an explanation of why the estimated net welfare effects have changed see chapter 1.

Economic Effects of Removing Significant Tariff Restraints

Frozen Fruit, Fruit Juices, and Vegetables

Current Tariff Status

The major sector products are frozen concentrated orange juice, which accounted for 23 percent of imports in 1993; apple juice, 21 percent; frozen broccoli, 10 percent; and frozen potatoes, 7 percent. U.S. rates of duty for sector products in 1993 averaged 25.8 percent ad valorem based on dutiable customs value and 15.2 percent based on c.i.f. value; the difference reflects trade under U.S. trade-preference programs.[5] For major sector products, tariffs based on dutiable value averaged 11.5 percent for frozen vegetables, 13.8 percent for frozen fruits, and 35.0 percent for juices. As part of the URA the United States agreed to cut most sector tariffs by about 15 to 20 percent. Summary data for the sector are provided in table 6-3.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $24 million from tariff removal in the frozen fruits, fruit juices, and vegetables sector in 1993. A large contribution to this net welfare gain is the expected 2.0-percent fall in the overall price of frozen fruits, fruit juices, and vegetables.

Detailed economic effects of removal of the tariff in this sector are presented in table 6-4. Direct effects

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[5] U.S. trade-preference programs include such programs as the Generalized System of Preferences and the Caribbean Basin Economic Recovery Act.

on this sector from tariff removal are a reduction in output of $95 million and a loss of 287 full time equivalent jobs (FTE). Both represent less than 1-percent declines from the original 1993 levels. Imports of frozen fruit, fruit juices, and vegetables rise by $123 million, a 15.7-percent increase, whereas exports fall off slightly.

Significant upstream sectors are adversely affected with losses to the combined upstream sectors of $37 million in output. A total of 259 workers across the upstream sectors would be displaced. The restaurant sector increases output $13 million and adds 210 jobs. Trade effects for both the downstream and upstream sectors are minimal.

Industrial Chemicals

Current Tariff Status

This sector includes three groups of products: (1) industrial inorganic chemicals (SIC 281), (2) cyclic crudes and intermediates (SIC 2865), and (3) industrial organic chemicals, not elsewhere classified (n.e.c.) (SIC 2869). Sector products consist of basic chemicals, such as acids, alkalies, and organic chemicals, or chemical products to be used in further manufacture, such as dyes and pigments. Sector imports are concentrated in the industrial organic chemicals, n.e.c., which accounted for 47 percent of 1993 imports, and the inorganic chemicals, with 38 percent of the total. Summary data for the sector are presented in table 6-5.

U.S. rates of duty for sector products in 1993 averaged 7.9 percent ad valorem based on the dutiable customs value and 4.4 percent based on the c.i.f. value. Almost 60 percent of sector imports that year entered duty-free, under either tariff provisions with MFN rates of zero or preferential trade programs such as the GSP. Most of the duty-free imports were inorganic chemicals; three-fourths of which, or $1.1 billion, entered duty-free in 1993.

Table 6-3
Frozen fruit, fruit juices, and vegetables: Summary data, 1991-93

· Item	1991	1992	1993
Shipments (million dollars)	7,395.7	7,415.5	7,742.6
Employment (1,000 workers)	46.0	48.0	48.0
Imports (million dollars)	1,060.4	1,135.2	993.6
Exports (million dollars)	727.9	808.0	840.3

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 6-4
Frozen fruit, fruit juices, and vegetables: Economic effects of tariff removal, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sector:								
Frozen fruit, fruit juices and vegetables ...	-287	-0.8	-95	-0.8	123	15.7	-5	-0.7
Upstream sectors:								
Fruits	-145	-0.2	-18	-0.2	-4	-0.2	-2	-0.1
Vegetables	-70	-0.1	-11	-0.1	-1	-0.1	-1	-0.1
Paperboard containers and boxes	-12	(4)	-3	(4)	(3)	(4)	(3)	(4)
Miscellaneous plastics products	-2	(4)	(3)	(4)	-1	(4)	(3)	(4)
Metal foil and leaf ...	-4	-0.1	-2	-0.1	(3)	(4)	(3)	-0.2
Motor freight transportation	-17	(4)	-2	(4)	(5)	(5)	(5)	(5)
Advertising	-9	(4)	-1	(4)	(3)	(4)	(3)	(4)
Downstream sectors:								
Restaurants	21	(4)	13	(4)	-2	(4)	4	(4)
Hospitals and nursing care facilities	16	(4)	1	(4)	(5)	(5)	(5)	(5)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	53	(4)	13	(4)	(3)	(4)	11	(4)
Mining	11	(4)	5	(4)	(3)	(4)	10	(4)
Construction	-4	(4)	(3)	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	63	(4)	21	(4)	-10	(4)	9	(4)
Durable manufacturing	292	(4)	61	(4)	-25	(4)	22	(4)
Transportation, communications, and utilities	37	(4)	11	(4)	-6	(4)	7	(4)
Wholesale and retail trade	-95	(4)	-5	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate ...	-37	(4)	-4	(4)	-1	(4)	2	(4)
Other services	32	(4)	7	(4)	-2	(4)	6	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Duty rates for the inorganic chemicals in 1993 averaged 4.3 percent ad valorem, based on the dutiable value. The United States did not make any tariff concessions in the URA on 92 percent of the dutiable imports of inorganic chemicals. It did agree to reduce tariffs on most of the remaining dutiable imports (which totaled $90.7 million in 1993), to 5.5 or 6.5 percent ad valorem, and eliminate tariffs on a small amount of the trade by the year 2004. The most heavily traded inorganic chemicals subject to the post-URA rates of 5.5 or 6.5 percent are tungstate salts and tungsten oxides, inorganic luminophores, titanium oxides, and cerium compounds. The average post-URA tariff for the inorganic chemicals is 4.2 percent, based on the dutiable value of 1993 imports.

U.S. rates of duty for cyclic organic crudes and intermediates averaged 14.3 percent ad valorem in 1993. As part of the URA, the United States agreed to reduce tariffs by the year 2004, to 5 percent for certain cyclic and acyclic hydrocarbon intermediates and their derivatives and to 6.5 percent for all other sector products.

The average duty rate for the industrial organic chemicals, n.e.c., was 7.1 percent ad valorem in 1993. As part of the URA the United States agreed to cut tariffs for these products, by the year 2004, to 5.5 percent for certain cyclic and acyclic hydrocarbon intermediates and their derivatives and to 6.5 percent for all other items. The United States also agreed to

Table 6-5
Industrial chemicals: Summary data, 1991-93

Item	1991	1992	1993
Inorganic chemicals:			
Shipments (*million dollars*)	25,637	26,306	26,484
Employment (*1,000 workers*)	104	105	103
Import (*million dollars*)	4,743	4,653	4,534
Exports (*million dollars*)	5,504	5,715	5,399
Cyclic crudes and intermediates:			
Shipments (*million dollars*)	10,652	9,569	[1]9,722
Employment (*1,000 workers*)	23	22	[1]22
Import (*million dollars*)	1,665	1,743	1,704
Exports (*million dollars*)	2,086	2,012	2,234
Organic chemicals, n.e.c.:			
Shipments (*million dollars*)	53,069	54,235	[1]55,103
Employment (*1,000 workers*)	101	100	[1]99
Imports (*million dollars*)	4,920	5,500	5,627
Exports (*million dollars*)	8,041	8,070	8,219

[1] Estimated by the staff of the USITC.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

bind tariffs at zero for certain items used as pharmaceuticals or intermediate chemicals for producing pharmaceuticals.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $62 million from tariff removal in the industrial chemicals sector in 1993. A large contribution to this net welfare gain is the 0.6-percent fall in the overall price of industrial chemicals. Across the economy, liberalization also brings a net gain in output of $52 million.

Economic effects of tariff removal in this sector are presented in table 6-6. Direct effects on this sector from tariff removal are a $118 million fall in output and a loss of over 241 jobs. Both figures represent a 0.05 percent decline. Imports of industrial chemicals increase by $106 million, less than 1 percent, while exports fall by $15 million.

Of the upstream sectors, crude petroleum/natural gas and utilities experience declines in output of $6 and $5 million respectively. There are negligible output and employment effects on the motor freight sector. Import and export effects for the upstream sectors are small.

All of the downstream sectors benefit from the tariff removal. The estimated combined downstream increase in output is $108 million. The downstream sector that experiences the largest impact is plastic materials and resins. The trade impact on downstream sectors is small.

Footwear

Current Tariff Status

Footwear is classified for tariff purposes as rubber and plastic footwear or nonrubber footwear. Nonrubber footwear includes leather and vinyl shoes, boots, and sandals; all slippers; and some athletic shoes. Rubber and plastics footwear, hereafter rubber footwear, includes sneakers, espadrilles, and running shoes with rubber or plastic soles vulcanized to fabric uppers, and certain rubber or plastic protective footwear. U.S. rates of duty for footwear in 1993 averaged 8.9 percent ad valorem on dutiable value for nonrubber footwear and 29.0 percent for rubber footwear. As part of the URA the United States agreed to reduce these tariffs on average by less than 1 percentage point to 8 percent and 27.5 percent, respectively. Summary data for the sectors are presented in table 6-7.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $147 million from tariff removal in the nonrubber footwear sector and $40 million for rubber footwear. This is largely due to the 3.5-percent fall in the overall price of nonrubber footwear and a 4.0 percent fall in the price of rubber footwear. Across the economy, liberalization brings negligible changes in output.

Table 6-6
Industrial Chemicals: Economic effects of tariff removal, 1993

Sector	Employment Number[1]	Employment Percent	Output Dollar[2]	Output Percent	Imports Dollar[2]	Imports Percent	Exports Dollar[2]	Exports Percent
Liberalized sector:								
Industrial Chemicals .	-241	-0.1	-118	-0.1	106	0.7	-15	-0.1
Upstream sectors:								
Crude petroleum and natural gas	-15	(4)	-6	(4)	-2	(4)	(3)	(4)
Motor freight transportation	-18	(4)	(3)	(4)	(3)	(4)	3	(4)
Utilities	-12	(4)	-5	(4)	(3)	(4)	3	0.1
Downstream sectors:								
Paper and pulp mills .	34	(4)	10	(4)	-2	(4)	3	(4)
Agricultural chemicals	10	(4)	5	(4)	(3)	(4)	3	0.1
Plastics materials and resins	77	0.1	18	0.1	-11	-0.4	19	0.2
Synthetic rubber	11	0.1	5	0.1	-1	-0.2	3	0.2
Man-made and organic fibers	25	(4)	5	(4)	-2	-0.1	2	0.1
Pharmaceutical industry	28	(4)	4	(4)	-1	(4)	1	(4)
Soap and other detergents	43	(4)	19	(4)	(3)	(4)	2	(4)
Paints and allied products	6	(4)	2	(4)	(3)	(4)	(3)	0.1
Petroleum refining ...	4	(4)	6	(4)	(3)	(4)	(3)	(4)
Miscellaneous plastics products	83	(4)	18	(4)	-7	-0.1	3	(4)
Steel	22	(4)	5	(4)	-2	(4)	1	(4)
Photographic supplies and equipment ...	35	(4)	4	(4)	-2	(4)	1	(4)
Medical facilities	33	(4)	7	(4)	(3)	(4)	(3)	(4)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	89	(4)	19	(4)	(3)	(4)	14	(4)
Mining	-3	(4)	(3)	(4)	(3)	(4)	(3)	(4)
Construction	-12	(4)	(3)	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	328	(4)	68	(4)	-9	(4)	12	(4)
Durable manufacturing	385	(4)	80	(4)	-15	(4)	25	(4)
Transportation, communications, and utilities	-41	(4)	-9	(4)	2	(4)	-3	(4)
Wholesale and retail trade	-241	(4)	-16	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate ...	-191	(4)	-46	(4)	(3)	(4)	-2	(4)
Other services	-437	(4)	-23	(4)	(3)	(4)	-3	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Table 6-7
Footwear: Summary data, 1991-93

Item	1991	1992	1993
Nonrubber footwear:			
Shipments (*million dollars*)	3,521.4	3,586.4	3,753.3
Employment (*1,000 workers*)	67.3	64.3	62.9
Imports (*million dollars*)	8,311.9	8,587.5	9,256.2
Exports (*million dollars*)	305.6	341.9	330.8
Rubber footwear:			
Shipments (*million dollars*)	801.5	772.2	650.1
Employment (*1,000 workers*)	10.9	10.8	10.7
Imports (*million dollars*)	791.8	1,028.7	1,332.1
Exports (*million dollars*)	110.8	120.2	119.5

Source: Compiled from official statistics of the U.S. Department of Commerce.

Economic effects of tariff removal in this sector are presented in tables 6-8 and 6-9. Direct effects on the nonrubber footwear sector are a $82 million fall in output and approximately 1,316 fewer full-time equivalent jobs. Both figures represent a 2-percent decline from original levels. Direct effects on the rubber footwear sector are a $14 million fall in output and 194 fewer jobs. These changes represent a 2.5-percent decline in output and employment. The effect of these liberalizations on imports within the sector is an increase in imports of $426 million in nonrubber footwear and $460 million in rubber footwear. For nonrubber footwear, the upstream sectors are affected, with leather tanning and finishing experiencing a $6 million decrease in output and a loss of 50 jobs. In the case of rubber footwear, the upstream sector of rubber is only slightly affected. Trade effects for the upstream sectors in both cases are small. No significant downstream sectors exist, since footwear is mainly for retail sales.

Leather Gloves and Mittens

Current Tariff Status

This sector includes leather work and dress gloves, which were dutiable at 14 percent ad valorem in 1993. As part of the URA the United States agreed to cut tariffs for women's and girls' leather dress gloves and men's and boys' dress gloves of horsehide leather and cowhide leather, and a combination of leather and fabric to 12.6 percent by 1999. On January 1, 1995, the tariffs were reduced to 13.7 percent. Tariffs were not cut for other sector goods such as work gloves. Summary data for the sector are presented in table 6-10.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $6 million from tariff removal in the leather gloves and mittens sector, due in large part to the 5.6-percent fall in the overall price of leather gloves and mittens experienced by consumers. Across the economy, net changes in output and employment are negligible. Net imports increase by $9 million and net exports increase by $8 million.

Economic effects of tariff removal in this sector are presented in table 6-11. Removal of the tariff leads to an increase in sector imports of $18 million, or 11.8 percent. Removing the tariff leads to an output loss of $8 million and 139 fewer jobs. The effect on exports in the liberalized sector is a drop of $1 million.

Both upstream sectors are affected adversely by liberalization, but the losses are small, with a combined output decline of $4 million. No industrial downstream sectors are identified for leather gloves and mittens since the products are sold mainly at the retail level.

Personal Leather Goods

Current Tariff Status

This sector includes small articles such as billfolds, key cases, and coin purses of leather or other materials except precious metal. U.S. rates of duty for sector articles in 1993 averaged 8.9 percent ad valorem. As part of the URA the United States agreed to reduce sector tariffs by an average of

Table 6-8
Nonrubber footwear: Economic effects of tariff removal, 1993

Sector	Employment Number[1]	Percent	Output Dollar[2]	Percent	Imports Dollar[2]	Percent	Exports Dollar[2]	Percent
Liberalized sector:								
Nonrubber footwear	-1,316	-2.0	-82	-2.0	426	7.1	37	6.1
Upstream sectors:								
Boot and shoe cut stock ..	-13	-0.4	-3	-0.4	-4	-1.0	1	0.3
Leather tanning and finishing	-50	-0.4	-6	-0.4	-2	-0.4	-2	-0.2
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	353	(3)	63	(3)	-1	(3)	39	0.1
Mining	59	(3)	14	(3)	-3	(3)	3	(3)
Construction	80	(3)	1	(3)	(4)	(4)	(4)	(4)
Nondurable manufacturing	362	(3)	43	(3)	-31	(3)	24	(3)
Durable manufacturing	1,184	(3)	201	(3)	-87	(3)	75	(3)
Transportation, communications, and utilities	203	(3)	24	(3)	-21	(3)	23	(3)
Wholesale and retail trade .	-389	(3)	-45	(3)	(4)	(4)	(4)	(4)
Finance, insurance, and real estate	-94	(3)	-80	(3)	-4	(3)	6	(3)
Other services	-379	(3)	-75	(3)	-13	(3)	36	(3)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than 0.05 percent.
[4] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Table 6-9
Rubber and plastics footwear: Economic effects of tariff removal, 1993

Sector	Employment Number[1]	Percent	Output Dollar[2]	Percent	Imports Dollar[2]	Percent	Exports Dollar[2]	Percent
Liberalized sector:								
Rubber and plastics footwear	-194	-2.5	-14	-2.5	460	13.1	1	0.7
Upstream sectors:								
Rubber	8	(4)	(3)	(4)	(3)	(4)	(3)	(4)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	385	(4)	71	(4)	-1	(4)	4	(4)
Mining	59	(4)	15	(4)	-3	(4)	4	(4)
Construction	62	(4)	-1	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	339	(4)	42	(4)	-39	(4)	24	(4)
Durable manufacturing .	1,251	(4)	216	(4)	-103	(4)	89	(4)
Transportation, communications, and utilities .	134	(4)	11	(4)	-24	(4)	24	(4)
Wholesale and retail trade	-731	(4)	-70	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate	-275	(4)	-124	(4)	-5	(4)	6	(4)
Other services	-1,042	(4)	-135	(4)	-16	(4)	28	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Table 6-10
Leather gloves and mittens: Summary data, 1991-93

Item	1991	1992	1993
Shipments (*million dollars*)	110.8	114.0	114.8
Employment (*1,000 workers*)	2.8	2.5	[1]2.3
Imports (*million dollars*)	112.7	117.0	148.7
Exports (*million dollars*)	13.1	12.2	14.0

[1] Estimated by the staff of the USITC.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Table 6-11
Leather gloves and mittens: Economic effects of tariff removal, 1993

Sector	Employment Number[1]	Employment Percent	Output Dollar[2]	Output Percent	Imports Dollar[2]	Imports Percent	Exports Dollar[2]	Exports Percent
Liberalized sector:								
Leather gloves and mittens	-139	-6.0	-8	-6.0	18	11.8	-1	-4.3
Upstream sectors:								
Fabric, yarn, and thread mills	-1	(4)	-1	(4)	(3)	(4)	(3)	(4)
Leather tanning and finishing	-32	-0.1	-3	-0.1	-1	-0.1	-1	-0.1
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	17	(4)	1	(4)	(3)	(4)	2	(4)
Mining	3	(4)	(3)	(4)	(3)	(4)	(3)	(4)
Construction	5	(4)	(3)	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	14	(4)	-2	(4)	-2	(4)	1	(4)
Durable manufacturing	63	(4)	3	(4)	-4	(4)	4	(4)
Transportation, communications, and utilities	14	(4)	1	(4)	-1	(4)	1	(4)
Wholesale and retail trade	3	(4)	-1	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate	5	(4)	-2	(4)	(3)	(4)	(3)	(4)
Other services	49	(4)	1	(4)	-1	(4)	2	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

4 percent to 8.5 percent ad valorem by the year 2004.[6] Tariffs were not cut for some of the lightest volume trade items, namely those of nonreptile leather and plastics. Summary data for the sector are presented in table 6-12.

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[6] Based on 1993 dutiable trade adjusted for trade with Mexico and Canada, which will be duty-free in 2004.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $11 million from tariff removal in the personal leather goods sector. Largely due to the 2.7-percent fall in the overall price of personal leather goods.

Economic effects of tariff removal in this sector are presented in table 6-13. Direct effects on this

Table 6-12
Personal leather goods: Summary data, 1991-93

Item	1991	1992	1993
Shipments (*million dollars*)	375.3	522.3	502.8
Employment (*1,000 workers*)	6.4	6.1	[1]6.0
Imports (*million dollars*)	291.7	318.6	320.7
Exports (*million dollars*)	21.3	22.8	20.0

[1] Estimated by the staff of the USITC.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Table 6-13
Personal leather goods: Economic effects of tariff removal, 1993

Sector	Employment Number[1]	Employment Percent	Output Dollar[2]	Output Percent	Imports Dollar[2]	Imports Percent	Exports Dollar[2]	Exports Percent
Liberalized sector: Personal leather goods	-200	-2.9	-18	-2.9	29	8.7	-1	-2.8
Upstream sectors: Miscellaneous plastics products, materials, and resins	-1	[4]	-1	[4]	[3]	[4]	[3]	[4]
Leather tanning and finishing	-60	-0.2	-7	-0.2	-1	-0.2	-2	-0.2
Downstream sectors: Jewelry	1	[4]	1	[4]	[3]	[4]	1	[4]
Rest of the U.S. economy: Agriculture, forestry, and fisheries	26	[4]	5	[4]	[3]	[4]	2	[4]
Mining	4	[4]	1	[4]	[3]	[4]	[3]	[4]
Construction	7	[4]	[3]	[4]	[5]	[5]	[5]	[5]
Nondurable manufacturing	8	[4]	5	[4]	-3	[4]	2	[4]
Durable manufacturing	104	[4]	15	[4]	-6	[4]	6	[4]
Transportation, communications, and utilities	24	[4]	3	[4]	-1	[4]	2	[4]
Wholesale and retail trade	20	[4]	[3]	[4]	[5]	[5]	[5]	[5]
Finance, insurance, and real estate	11	[4]	1	[4]	[3]	[4]	[3]	[4]
Other services	56	[4]	[3]	[4]	-1	[4]	2	[4]

[1] Full-time equivalents.
[2] In millions of dollars in base year prices
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

sector from tariff removal are a decline in output of $18 million and 200 fewer jobs. Both figures represent a decline of approximately 2.9 percent. Imports increase $29 million, representing an 8.7-percent gain, whereas exports fall slightly by $1 million, or by 2.8 percent. Upstream sectors are slightly affected, experiencing a decline in output of $8 million. The downstream sector, jewelry, experiences only small gains. Import and export effects for both upstream and downstream sectors are negligible.

Ceramic Wall and Floor Tile

Current Tariff Status

Ceramic wall and floor tile includes glazed and unglazed mosaic and non-mosaic tile. U.S. rates of duty for ceramic tile in 1993 averaged 17.1 percent ad valorem. As part of the URA the United States agreed to cut sector tariffs by roughly half by the year 2004. Tariffs will be reduced from 20 to 10 percent for mosaic tile and unglazed non-mosaic tile, and from 19 to 8.5 percent for glazed non-mosaic tile. On January 1, 1995, the tariffs were reduced by 1 percentage point. Summary data for the sector are presented in table 6-14.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $41 million from tariff removal in the ceramic wall and floor tile sector in 1993 largely due to the 5.1-percent fall in the overall price of ceramic wall and floor tile. Across the economy, net changes in output and employment are negligible. In addition, net imports increase by $9 million, as net exports increase by $28 million.

Economic effects of tariff removal in this sector are presented in table 6-15. Direct effects on this sector from tariff removal are a $59 million fall in output and a loss of 676 jobs. Both figures represent approximately a 7.2-percent decline. Imports of

ceramic wall and floor tile rise by $62 million, a 10.7 percent increase, whereas exports fall slightly.

Upstream sectors to ceramic wall and floor tile experienced small adverse effects. Motor freight transportation[7] suffers the largest loss with a $6 million fall in output and 52 fewer jobs both of which represent a decline of less than 0.05 percent. Downstream sectors are not significantly affected by the tariff removal. Trade effects are negligible for the upstream sectors and downstream sectors.

China Tableware

Current Tariff Status

This sector includes household and commercial chinaware, including bone chinaware. U.S. rates of duty for china tableware in 1993 averaged 12.2 percent ad valorem; the rates ranged from 8 to 35 percent. As part of the URA the United States agreed to reduce duties on china tableware on average by 31 percent to 9 percent ad valorem by the year 2004. On January 1, 1995, the tariffs were lowered to an average of 12 percent. Summary data for the sector are presented in table 6-16.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $11 million from tariff removal in the china tableware sector. A large contribution to this net welfare gain is the 5.5-percent fall in the overall price of china tableware. Across the economy, net changes in output and employment are negligible.

Economic effects of tariff removal in this sector are presented in table 6-17. Direct effects on this sector from tariff removal are a $33 million fall in output and 263 fewer jobs. Both figures represent a 7-percent decline from original levels.

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[7] According to the U.S. Bureau of Economic Analysis Input-Output table, motor freight is a significant upstream and downstream sector to ceramic tile due to hauling raw materials and the final product.

Table 6-14
Ceramic wall and floor tile: Summary data, 1991-93

Item	1991	1992	1993
Shipments (*million dollars*)	750.8	677.7	738.6
Employment (*1,000 workers*)	9.5	9.0	9.0
Imports (*million dollars*)	365.1	418.5	471.9
Exports (*million dollars*)	21.0	19.3	22.6

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 6-15
Ceramic wall and floor tile: Economic effects of tariff removal, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sector:								
Ceramic wall and floor tile	-676	-7.2	-59	-7.2	62	10.7	-2	-4.5
Upstream sectors:								
Industrial organic and inorganic chemicals	-7	(4)	-5	(4)	-1	(4)	(3)	(4)
Utilities	-4	(4)	-3	(4)	(3)	(4)	(3)	(4)
Motor freight transportation	-52	(4)	-6	(4)	(3)	(4)	(5)	(5)
Downstream sectors:								
New residential construction	2	(4)	(3)	(4)	(5)	(5)	(5)	(5)
New industrial and commercial construction	2	(4)	(3)	(4)	(5)	(5)	(5)	(5)
New farm construction	1	(4)	(3)	(4)	(5)	(5)	(5)	(5)
Maintenance and repairs	-4	(4)	-1	(4)	(5)	(5)	(5)	(5)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	59	(4)	11	(4)	(3)	(4)	6	(4)
Mining	-2	(4)	-2	(4)	-1	(4)	(3)	(4)
Construction	2	(4)	(3)	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	81	(4)	11	(4)	-4	(4)	4	(4)
Durable manufacturing	199	(4)	32	(4)	-12	(4)	12	(4)
Transportation, communications, and utilities	48	(4)	6	(4)	-3	(4)	4	(4)
Wholesale and retail trade	83	(4)	1	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate	54	(4)	3	(4)	(3)	(4)	1	(4)
Other services	215	(4)	6	(4)	-2	(4)	5	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Imports rise $36 million, and exports increase by $4 million. Output and trade effects for the upstream and downstream sectors are negligible.

Blast Furnaces and Steel Mills

Current Tariff Status

This sector includes steel mill products, which range from coke and its byproducts to steel rolled into basic shapes, such as plates, sheets, rods, bars, and structural shapes. U.S. rates of duty for steel mill products in 1993 averaged 4.4 percent ad valorem;

excluding imports from Canada, a major supplier, the average duty was 5.4 percent.[8] As part of the URA the United States agreed to phase out tariffs for steel mill products by 2004. Other countries that agreed to phase out steel tariffs under the URA include Canada, the European Union, Japan, Korea, Austria, Sweden, Finland, and Norway. Summary data for the sector are presented in table 6-18.

[8] U.S. duties on sector imports from Canada are being phased out over 10 years, or by 1998, under the United States-Canada Free Trade Agreement (CFTA), the duty phaseout schedules of which were incorporated and continued under the North American Free-Trade Agreement.

Table 6-16
China tableware: Summary data, 1991-93

Item	1991	1992	1993
Shipments (*million dollars*)	355.6	290.6	332.8
Employment (*1,000 workers*)	6.0	5.3	5.3
Imports (*million dollars*)	290.1	307.8	316.6
Exports (*million dollars*)	43.0	50.2	46.8

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 6-17
China tableware: Economic effects of tariff removal, 1993

Sector	Employment Number[1]	Employment Percent	Output Dollar[2]	Output Percent	Imports Dollar[2]	Imports Percent	Exports Dollar[2]	Exports Percent
Liberalized sector:								
China tableware	-263	-7.0	-33	-7.0	36	9.6	4	6.8
Upstream sector:								
Motor freight transportation	-22	(4)	-3	(4)	(3)	(4)	(5)	(5)
Downstream sectors:								
Eating and drinking places	138	(4)	6	(4)	(3)	(4)	2	(4)
Nursing care facilities	5	(4)	0	(4)	(5)	(5)	(5)	(5)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	34	(4)	7	(4)	(3)	(4)	4	(4)
Mining	3	(4)	1	(4)	(3)	(4)	(3)	(4)
Construction	-8	(4)	-1	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	45	(4)	11	(4)	-3	(4)	3	(4)
Durable manufacturing	81	(4)	16	(4)	-8	(4)	7	(4)
Transportation, communications, and utilities	9	(4)	2	(4)	-2	(4)	2	(4)
Wholesale and retail trade	-9	(4)	(3)	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate	2	(4)	(3)	(4)	(3)	(4)	(3)	(4)
Other services	15	(4)	-2	(4)	2	(4)	2	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Table 6-18
Blast furnaces and steel mills: Summary data, 1991-93

Item	1991	1992	1993
Shipments (*million dollars*)	40,688	42,221	44,493
Employment (*1,000 workers*)	196	187	[1]175
Imports (*million dollars*)	7,760	7,841	8,552
Exports (*million dollars*)	3,728	3,041	2,821

[1] Estimated by the staff of the USITC.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $162 million from tariff removal in the blast furnace and steel mill sector largely due to the 0.6-percent drop in the price of these products. Aggregate output in the economy increases by $55 million.

Economic effects of tariff removal in this sector are presented in table 6-19. Direct effects on this sector from lost tariff removal are a $350 million fall in output and a loss of 1,265 jobs. Both figures represent approximately a 0.4-percent decline. Imports of blast furnace and steel mill products rise by $285 million, a 2.8-percent increase, whereas exports fall by $21 million.

Upstream sectors experience small adverse effects. Iron mining experiences a decrease in output and employment of 0.2 percent. The negative effect on coal mining is less than one tenth of a percent both in terms of output and employment. The aggregate upstream sector, which contains industries such as industrial chemicals, transport and utilities, show small negative effects of less than 0.05 percent on output and employment. The trade effects on the upstream industries are negligible.

Employment and output in downstream sectors increase by less than 0.05 percent. The aggregate downstream sector includes bolts, metal cans, autos and forged steel products. Imports in these sectors decrease and exports increase, but the effects are small as well.

Table 6-19
Blast furnaces and steel mills: Economic effects of tariff removal, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sector:								
Blast furnaces and steel mills	-1,265	-0.4	-350	-0.4	285	2.8	-21	-0.4
Upstream sector:								
Iron mining	-60	-0.2	-22	-0.2	-3	-0.6	-5	-0.5
Coal mining	-44	(4)	-17	(4)	(3)	(4)	-1	(4)
Aggregate upstream	-120	(4)	-34	(4)	13	(4)	8	(4)
Downstream sectors:								
Auto parts	122	(4)	45	(4)	-10	(4)	2	(4)
Metal Products	11	(4)	3	(4)	-2	(4)	(3)	(4)
Metal stampings	54	(4)	8	(4)	-2	-0.2	1	(4)
Aggregate downstream	12	(4)	3	(4)	-2	(4)	3	(4)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	(3)	(4)	4	(4)	(3)	(4)	20	(4)
Mining	-3	(4)	9	(4)	-3	(4)	1	(4)
Construction	-41	(4)	(3)	(4)	(5)	(5)	(5)	(5)
Nondurable manufacturing	236	(4)	85	(4)	-15	(4)	17	(4)
Durable manufacturing	1,181	(4)	242	(4)	-79	(4)	81	(4)
Transportation, communications, and utilities	26	(4)	7	(4)	-2	(4)	3	(4)
Wholesale and retail trade	-309	(4)	-13	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate	-94	(4)	11	(4)	-1	(4)	3	(4)
Other services	123	(4)	37	(4)	-6	(4)	12	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Ball and Roller Bearings

Current Tariff Status

Ball and roller bearings (including parts) are used to reduce friction between moving and fixed parts in machinery, such as motor vehicles, farm implements, materials-handling equipment, motors, pumps, compressors, home appliances, and aircraft engines. U.S. rates of duty for sector products in 1993 averaged 9.1 percent ad valorem on dutiable value. As part of the URA the United States agreed to reduce sector tariffs on average by 15 percent to 7.7 percent ad valorem by 1999. On January 1, 1995, tariffs were reduced to an average of 8.9 percent. Summary data for the sector are presented in table 6-20.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $47 million from tariff removal in the ball and roller bearings and parts sector in 1993. A large contribution to this net welfare gain is the 1.6 percent fall in the overall price of ball and roller bearings paid by consumers. Across the economy, net changes in output and employment are negligible.

Economic effects of tariff removal in this sector are presented in table 6-21. Direct effects on this sector from lost tariff protection are a decline in output of $87 million and 393 jobs. Both figures represent a 1.2 percent decline from 1993 output and employment levels. Removal of the tariff also boosts imports by $68 million and reduces exports by $12 million.

Upstream, the steel sector is affected, but output declines are small. All significant downstream sectors benefit, with the automotive industry experiencing an estimated $5 million gain in output and 17 additional jobs.

Household Audio and Video Equipment

Current Tariff Status

This sector includes radio and television receivers, amplifiers, speakers, video camera-recorders, phonographs, audio and video tape recorders and players, compact disc players, and other consumer audio and video equipment. U.S. rates of duty for sector products in 1993 averaged 3.8 percent ad valorem. As part of the URA, the United States agreed to cut sector tariffs on average by 51 percent to 2.2 percent ad valorem by 1999. On January 1, 1995, the tariffs were lowered to an average of 3.7 percent. Summary data for the sector are presented in table 6-22.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $98 million from tariff removal in the household audio and video equipment sector. The main contribution to this net welfare gain is the 2.4-percent decrease in the consumers price.

Economic effects of tariff removal in this sector are presented in table 6-23. Tariff removal for this sector results in a 1.3-percent decline in output and employment ($222 million and 466 FTEs, respectively). Imports of household audio and video equipment increase by 3.1 percent and exports drop by 0.8 percent. The main effect on the upstream sectors is on the electronics sector which has a decrease in output of $16 million and a decrease in employment of 63 FTEs. The import and export effects on the upstream sectors are minimal (less than 0.05 percent). Since most household audio and video equipment is sold directly to consumers, the downstream effects are mainly on the households with minimal effects on repair services or motor vehicles.

Table 6-20
Ball and roller bearings: Summary data, 1991-93

Item	1991	1992	1993
Shipments (*million dollars*)	3,778.9	4,011.3	4,331.1
Employment (*1,000 workers*)	40.7	38.7	36.4
Imports (*million dollars*)	811.6	894.7	1,004.3
Exports (*million dollars*)	673.7	659.3	657.9

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 6-21
Ball and roller bearings: Economic effects of tariff removal, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sector:								
Ball and roller bearings	-393	-1.2	-87	-1.2	68	5.4	-12	-1.1
Upstream sectors:								
Steel	-24	([4])	-6	([4])	-2	([4])	([3])	([4])
Downstream sectors:								
Farm and garden machinery	7	([4])	1	([4])	-1	([4])	1	([4])
Machine tools	6	([4])	1	([4])	-1	([4])	([3])	([4])
Industrial machinery ..	6	([4])	1	([4])	-2	([4])	1	([4])
Automotive industry ..	17	([4])	5	([4])	-2	([4])	1	([4])
Aircraft and missile equipment	11	([4])	3	([4])	([3])	([4])	2	([4])
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	47	([4])	12	([4])	([3])	([4])	6	([4])
Mining	6	([4])	4	([4])	([3])	([4])	([3])	([4])
Construction	-9	([4])	([3])	([4])	([5])	([5])	([5])	([5])
Nondurable manufacturing	64	([4])	23	([4])	-4	([4])	1	([4])
Durable manufacturing	169	([4])	36	([4])	-16	([4])	5	([4])
Transportation, communications, and utilities	36	([4])	10	([4])	-3	([4])	14	([4])
Wholesale and retail trade	-49	([4])	-1	([4])	-([5])	([5])	([5])	([5])
Finance, insurance, and real estate	5	([4])	9	([4])	([3])	([4])	1	([4])
Other services	101	([4])	15	([4])	([3])	([4])	4	([4])

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

Table 6-22
Household audio and video equipment: Summary data, 1991-93

Item	1991	1992	1993
Shipments (million dollars)	7,445	7,586	7,907.6
Employment (1,000 workers)	29.5	29.6	[1]29.7
Imports (million dollars)	11,381	12,961	13,533
Exports (million dollars)	2,286	2,466	2,691

[1] Estimated by the staff of the USITC.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Table 6-23
Household audio and video equipment: Economic effects of tariff removal, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sector:								
Home audio and video equipment ...	-466	-1.3	-222	-1.3	528	3.1	-49	-0.8
Upstream sectors:								
Electronics	-63	(4)	-16	(4)	-17	(4)	-3	(4)
Advertising	5	(4)	-2	(4)	(5)	(5)	(5)	(5)
Downstream sectors:								
Repair services	17	(4)	2	(4)	(3)	(4)	(3)	(4)
Motor vehicles	-40	(4)	-10	(4)	(3)	(4)	(3)	(4)
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	500	(4)	95	(4)	-2	(4)	61	(4)
Mining	69	(4)	19	(4)	-5	(4)	5	(4)
Construction	66	(4)	(3)	(4)	(5)	(5)	(5)	(5)
Nondurable manu-facturing	319	(4)	35	(4)	-57	(4)	37	(4)
Durable manufacturing	1,346	(4)	234	(4)	-87	(4)	99	(4)
Transportation, commun-ications, and utilities	208	(4)	26	(4)	-32	(4)	34	(4)
Wholesale and retail trade	-975	(4)	-88	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate	-317	(4)	-136	(4)	-6	(4)	9	(4)
Other services	-827	(4)	-109	(4)	-21	(4)	42	(4)

[1] Full-time equivalents..
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.
Source: Estimated by the staff of the USITC.

Motor Vehicles

Current Tariff Status

This sector includes fully assembled passenger automobiles, pickup trucks, commercial cars and buses, and special purpose motor vehicles for highway use, as well as chassis and passenger car bodies. U.S. rates of duty for sector products in 1993 averaged 2.0 percent ad valorem. As part of the URA the United States offered only a few tariff cuts in the sector. Tariffs on truck cab chassis, buses and certain special-purpose vehicles (including chassis), which represent a minor portion of U.S. motor vehicle imports, will either be phased out by 1999 or reduced by 2004. Summary data for the sector are presented in table 6-24.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $122 million from tariff removal in the motor vehicles sector. The price decrease to consumers of motor vehicles is 0.9 percent.

Detailed effects are presented in table 6-25. Within the motor vehicles sector, output decreases by $756 million and employment drops by 2,788 full time equivalent workers. Both of these decreases represent a 0.5-percent decrease from the base values. Imports show a $980 million dollar increase, while exports are only minimally affected.

The upstream auto parts sector shows a decrease in employment of 99 FTEs and a $36-million drop in output. Both represent a decline of less than 0.05 percent. The aggregate upstream sector which includes tires, electronics, plastics, engines, carburetors, and glass, shows a $28 million decrease

Table 6-24
Motor vehicles: Summary data, 1991-93

Item	1991	1992	1993
Shipments (*million dollars*)	133,861	144,200	161,500
Employment (*1,000 workers*)	316	314	319
Imports (*million dollars*)	54,136	56,042	61,760
Exports (*million dollars*)	14,892	17,265	18,135

Source: Data on shipments from U.S. Department of Commerce, *U.S. Industrial Outlook - 1994*, employment from *Economic Indicators: 4th Quarter 1994*, and trade compiled from official statistics of the U.S. Department of Commerce.

Table 6-25
Motor vehicles: Economic effects of tariff removal, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sector:								
Motor vehicles	-2,788	-0.5	-756	-0.5	980	1.2	-17	-0.1
Upstream sectors:								
Auto parts	-99	([4])	-36	([4])	-60	-0.3	25	0.1
Aggregate upstream except parts	-148	([4])	-28	([4])	-38	-0.1	5	([4])
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	939	([4])	195	0.1	-3	([4])	114	0.3
Mining	128	([4])	49	([4])	-6	([4])	9	0.1
Construction	76	([4])	8	([4])	([5])	([5])	([5])	([5])
Nondurable manufacturing	758	([4])	187	([4])	-85	-0.1	73	0.1
Durable manufacturing	2,128	([4])	394	([4])	-147	-0.1	158	([4])
Transportation, communications, and utilities	655	([4])	129	([4])	-59	-0.1	73	0.1
Wholesale and retail trade	-917	([4])	-74	([4])	([5])	([5])	([5])	([5])
Finance, insurance, and real estate	-377	([4])	-134	([4])	-11	([4])	17	0.1
Other services	-394	([4])	-155	([4])	-33	([4])	47	0.1

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

in output and a loss of 148 FTEs. In total the imports in the upstream sectors drop by $98 million and exports increase by $30 million. For the same reason as household audio and video, the main downstream effects are gains realized by the household sector.

Costume Jewelry and Costume Novelties

Current Tariff Status

Sector products include rings, bracelets, earrings, pendants, necklaces, and other articles of personal adornment of nonprecious materials such as plastics or base metals like copper, brass, steel, or aluminum. U.S. rates of duty for sector articles in 1993 averaged 9.8 percent ad valorem based on the dutiable value and 7.3 percent based on the customs value; the difference reflects trade under U.S. trade-preference programs. As part of the URA the United States did not reduce tariffs for certain imitation jewelry, which accounted for about 80 percent of sector imports in 1993.[9] The United States did agree to eliminate tariffs immediately for imitation toy jewelry. Summary data for the sector are presented in table 6-26.

Economic Effects of Tariff Removal

The model estimates that the U.S. economy experiences a net welfare gain of $11 million from tariff removal in the costume jewelry and costume novelties sector, largely due to the 3.0 percent decline in the price of costume jewelry and costume novelties.

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[9] These imports are in HTS subheadings 7117.19.90 and 7117.90.90, which are "basket" provisions for finished or incomplete articles of imitation jewelry such as earrings, bracelets, and necklaces; semifinished split rings of aluminum wire; and ornamental motifs of base metal assembled by small links into strips of indefinite length.

Across the economy, net changes in output and employment are negligible.

Economic effects of tariff removal in this sector are presented in table 6-27. Direct effects on this sector from tariff removal are a reduction in output of $30 million and a loss of 257 FTEs. Both figures represent a decline of approximately 1.5 percent from original levels. Imports increase by $67 million or 6.4 percent. Upstream and downstream sectors are only marginally affected by tariff liberalization. However, the watches, clocks and parts sector realizes small gains in employment, output, and exports.

The Effects of the First-Year Uruguay Round Changes

The overall effect of the tariff changes on the 13 sectors analyzed in this chapter in 1995 brought about by the URA is an estimated increase in net welfare of $20 million. The individual tariff cuts modeled are discussed in the industry descriptions given earlier in the chapter. For two of the products, nonrubber footwear and rubber and plastic footwear the changes in tariffs were negligble. For two products, ceramic wall and floor tile and china tableware, the tariffs decreased by 1 percentage point. The tariffs on the other eight products decreased by 0.1 percentage points or less. The effect on employment, output, imports and exports given by the Commission model when modeling these tariff cuts was minor. In almost all cases the changes were less than one-tenth of 1 percent.[10]

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[10] For a analysis of the effects of the URA tariff cuts in a multilateral framework for motor vehicles, footwear, chemicals, steel, and household audio and video equipment, see *Potential Impact of the U.S. Economy and Industries of the GATT Uruguay Round Agreements*, USITC publication 2790, June 1994.

Table 6-26
Costume jewelry and costume novelties: Summary data, 1991-93

Item	1991	1992	1993
Shipments (*million dollars*)	1,399.3	1,513.5	1,540.9
Employment (*1,000 workers*)	17.6	17.5	18.0
Imports (*million dollars*)	573.3	637.1	650.8
Exports (*million dollars*)	127.5	119.5	129.6

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 6-27
Costume jewelry and costume novelties: Economic effects of tariff removal, 1993

Sector	Employment		Output		Imports		Exports	
	Number[1]	Percent	Dollar[2]	Percent	Dollar[2]	Percent	Dollar[2]	Percent
Liberalized sector:								
Costume jewelry and costume novelties .	-257	-1.5	-30	-1.5	67	6.4	-3	-1.3
Upstream sectors:								
Personal leather goods	0	(4)	(3)	(4)	(3)	(4)	(3)	(4)
Primary nonferrous metals	0	(4)	(3)	(4)	(3)	(4)	(3)	(4)
Jewelers' materials and lapidary work ..	-6	(4)	-2	(4)	-3	-0.1	(3)	(4)
Downstream sectors:								
Cosmetics industry ...	0	(4)	(3)	(4)	(3)	(4)	(3)	(4)
Watches, clocks, and parts	20	0.2	5	0.2	1	0.1	1	0.3
Rest of the U.S. economy:								
Agriculture, forestry, and fisheries	63	(4)	12	(4)	(3)	(4)	7	(4)
Mining	11	(4)	3	(4)	-6	(4)	(3)	(4)
Construction	13	(4)	(3)	(4)	(3)	(5)	(5)	(5)
Nondurable manufacturing	77	(4)	12	(4)	-6	(4)	5	(4)
Durable manufacturing	209	(4)	36	(4)	-15	(4)	13	(4)
Transportation, communications, and utilities	33	(4)	4	(4)	-4	(4)	4	(4)
Wholesale and retail trade	-73	(4)	-8	(4)	(5)	(5)	(5)	(5)
Finance, insurance, and real estate	-22	(4)	-15	(4)	-1	(4)	1	(4)
Other services	-66	(4)	-12	(4)	-2	(4)	5	(4)

[1] Full-time equivalents.
[2] In millions of dollars in base year prices.
[3] Change less than $500,000.
[4] Change less than 0.05 percent.
[5] Nontradeable sector.

Source: Estimated by the staff of the USITC.

CHAPTER 7
Methods Used to Quantify the Restrictiveness of Trade Policies

Introduction

Over the past few decades, numerous bilateral and multilateral efforts to liberalize trade have resulted in significant reductions in average tariff levels. As a result, emphasis has shifted to examining the impact of remaining nontariff barriers such as quotas and voluntary export restraints. These measures differ from tariffs in terms of their potential economic effects and tend to be less transparent. In addition, their quantification requires substantial theoretical and empirical effort since each type of nontariff barrier necessitates individual attention.

This chapter provides a brief review of various types of restraints and then discusses the characteristics of the specific types of import restraints that are the focus of this study. Included in this discussion is a review of some of the more important differences between the various import restraints and an examination of alternative techniques that have been used to estimate the economic effects of these measures. In particular, the discussion focuses on different methods of estimating the tariff equivalents of nontariff barriers and various associated measurement problems. The chapter concludes with a discussion of an adaptation of the trade restrictiveness index, which is a measure designed to overcome some of these measurement problems. The chapter thus describes the methods used in the analyses discussed in previous chapters and highlights areas in which future research might be focused.

Types of Import Restraints

A variety of policy measures used by governments have the potential to restrict the volume of imports. One widely used catalog of these barriers is the UNCTAD Data Base on Trade Measures (TRAINS).[1]

In addition to tariffs, nontariff barriers (NTBs) such as quotas, voluntary export restraints (VERs)[2], customs formalities, prohibitions, government procurement regulations, and domestic content regulations can lead to reductions in imports. Measures that affect domestically produced, as well as imported goods (e.g. health and safety regulations, technical standards, certification requirements, marking and packaging requirements), may also effectively reduce the level of imports.[3]

The UNCTAD classification scheme also lists a number of measures that are applied in domestic markets, such as input and output subsidies and various tax credits. These policies may influence the volume of imports and therefore have consequences in the marketplace that are similar to border measures.[4] In addition, general macroeconomic policies such as fiscal, monetary, and exchange rate policies may also influence the level of imports.

As discussed in chapter 1, the purpose of this study is to focus on significant U.S. import restraints. Many of the nontariff barriers (NTBs) and other policy measures cited above are difficult to quantify, in part, because available data are inadequate. Thus,

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[1] See also, Sam Laird and Alexander Yeats, *Quantitative Methods for Trade-Barrier Analysis,*

[1]—*Continued*
(New York: New York University Press), 1990, for a comprehensive discussion of the different types of NTBs, how to quantify these measures, and a review of relevant literature.

[2] Or voluntary restraint agreements (VRAs).

[3] In many cases, these measures may be imposed not with the intent of restricting imports, *per se*, but with the intent of pursuing some other policy objective. Under certain circumstances, the use of border measures for a variety of domestic policy purposes is protected by Article XX of the GATT.

[4] A standard survey of the major similarities is in Jagdish N. Bhagwati, "General Theory of Distortions and Welfare," in Jagdish N. Bhagwati, Ronald N. Jones, Robert A. Mundell, and Jaroslav Vanek, eds., *Trade, Balance of Payments and Growth,* (Amsterdam: North Holland Publishing Co.), 1971, pp. 69-90.

although these measures may have an impact on the level of imports, the remainder of this chapter focuses on specific tariff and nontariff measures that are applied at the border with explicit reference to import markets.

Characteristics of Tariffs, Quotas, and VERs

By itself, the effect of the imposition of a tariff is relatively straightforward. Figure 7-1 represents the market for an imported product in a country that is "small" in world markets, in the sense that fluctuations in its demand for the imported good have a negligible effect on the good's international price. S represents import supply before the imposition of a tariff, while S_1 represents supply after imposition of a tariff ($S_1 = S(1+t)$ with t equal to the ad valorem tariff). The demand curve, D, represents the demand for imports only. The free-trade price and quantity of imports are P and Q, whereas under the tariff, the price paid by consumers increases to P_1 and the quantity of imports falls to Q_1.[5]

In general, quantity restraints such as import quotas and VERs can be constructed to mimic the market effects of a given tariff, and *vice versa*. As shown in Figure 7-1, if the measure restricts imports to the level Q_1, this restriction in import supply causes an increase in price to P_1. Finding a tariff equivalent of an actual quota set at Q_1 amounts to identifying the ad valorem tariff t that reproduces the effects of a given quota.

In practice, tariffs and quantity restraints generally are imposed on imports simultaneously. This situation and the differences in the effects of tariffs, quotas, and VERs on economic welfare are discussed in the following section.

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[5] If the supply curve is upward sloping, as it would be if the importing country's demand had a noticeable effect on world prices, the introduction of a tariff generally means that market prices increase by less than the amount of the tariff (i.e., P_1/P is generally less than 1+t).

Differences between Quantitative Restraints and Tariffs

Effects on Economic Welfare

Although tariffs, quotas, and VERs are similar in terms of their effects on the prices paid by consumers,[6] these measures may affect overall economic welfare differently. A significant difference relates to who captures the revenues generated by the increase in price shown in figure 7-1 as area B. In the case of a tariff, this area represents the tariff revenue collected by the treasury of the importing government. In the case of a quantitative restriction, the revenue or rents represented by area B may be captured by either the exporting country (the government or firms) or the importing country (the government or firms) depending on market conditions and the way in which the restraint is administered.

Figure 7-2 illustrates the effects of the imposition of a tariff and a binding domestically held import quota. As in figure 7-1, S represents the import supply curve prior to the imposition of the tariff, D represents the demand curve for imports, and P and Q represent the free-trade equilibrium price and quantity, respectively.[7] Imposition of a tariff shifts the supply curve to S_1, with resulting changes in price and quantity, P_1 and Q_1. The simultaneous imposition of an import quota is represented by Q_2 and the resulting price P_2. With both the quota and tariff in place, area A represents the tariff revenues collected by the importing country government and area B shows the quota rents captured by importers assuming that foreign suppliers do not have market power sufficient

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[6] The losses suffered by consumers who would have bought imports at the price P but do not buy at the higher price P_1 are the same whether a tariff, quota, or VER is imposed (figure 7-1). If D is a linear function, this loss is measured by triangle A, with its area measured by $(1/2)*(P_1 - P)*(Q - Q_1)$. This value is generally referred to as "deadweight loss" or as the "Harberger triangle." For an example of this type of analysis see the discussion of the effects of restrictions on U.S. imports of peanuts (chapter 4 and appendix E).

[7] As shown in figure 7-2, the free-trade price is the c.i.f. (inclusive of cost, insurance, and freight) price of the imported product.

Figure 7-1
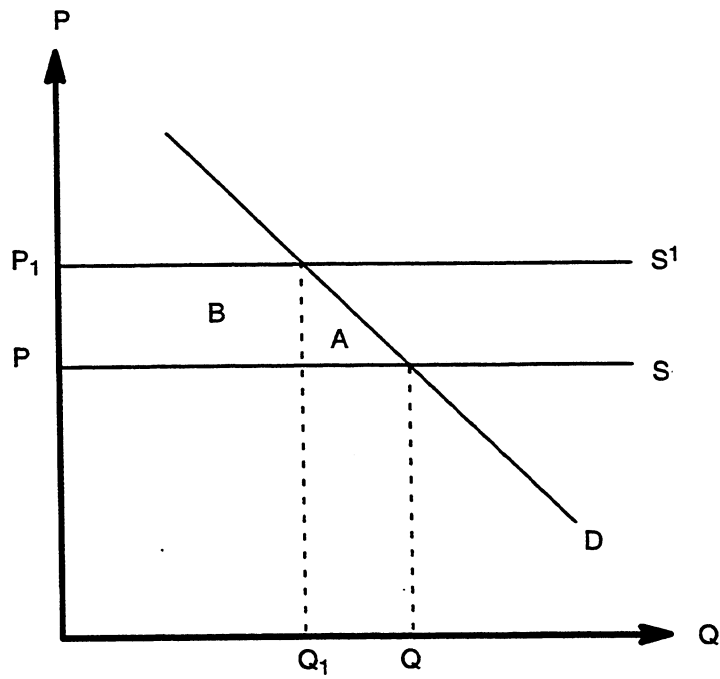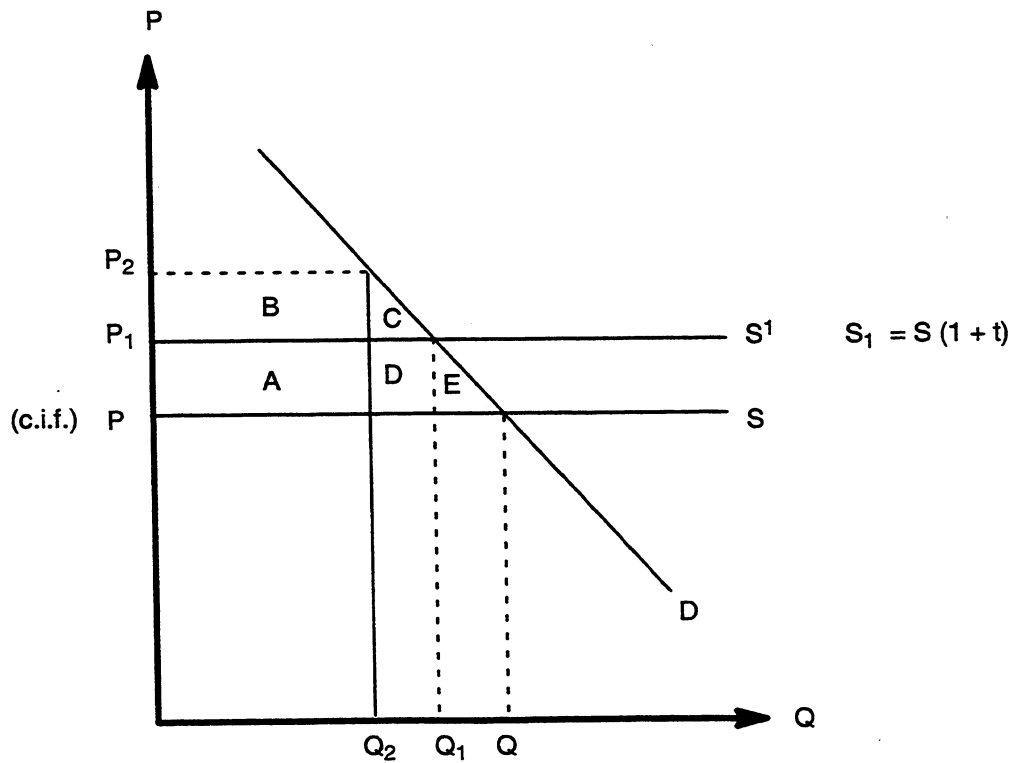**The effect of the imposition of a tariff or a quota**

Figure 7-2
The effect of a tariff and a domestically-held quota

$S_1 = S(1+t)$

to alter prices in the importing country.[8] Areas C, D, and E represent the deadweight or efficiency loss to consumers compared to the free trade equilibrium. That is, consumers purchase less and pay higher prices than they would if there were no import restraints. If the quota is eliminated, prices and quantities will shift to P_1 and Q_1. Quota rents are eliminated and the tariff revenues collected by the importing government equal areas A and D. The efficiency loss to consumers equals area E.

Figure 7-3 shows the simultaneous imposition of a tariff and a binding foreign-held quota. In this case, the rents associated with the restraint (whether it is a VER or an import quota) are captured by foreign exporters whose sales of products to the importing country are arms-length transactions. Thus, any price increase resulting from the restraint will be included in the c.i.f. import price, rather than after entry into the importing country. As above, S represents the free-trade supply curve, D represents the demand for imports, and P and Q represent the free-trade equilibrium price and quantity. For illustrative purposes, D_1 represents the demand curve accounting for the tariff (i.e., $D_1 = D/(1+t)$). The imposition of a binding restraint results in Q_2 and P_2. In the absence of market power on the part of importers, P_1 represents the unit price exporters are able to charge for their products as a result of the quantity restriction. P_2 represents the import price inclusive of the tariff (i.e. the c.i.f. price plus the ad valorem tariff). Area A represents the tariff revenues collected by the importing country government and area B represents the rents captured by the foreign exporters (or foreign government if it auctions the export licenses). In this case, if the quantity restraint is eliminated, the tariff becomes the limiting factor and prices and quantities revert to P_1 and Q_1, respectively (figure 7-2).

The above analysis also can be used to assess the effects of a tariff-rate quota when the second tier tariff rate is sufficiently high to effectively prevent additional imports.[9] In this case, Q_2 (as shown in figure 7-2) represents the level of imports that is allowed entry under the lower tariff rate and P_2-P equals the price wedge associated with the imposition of the quota (i.e., the higher tariff rate). The tariff revenue collected by the importing government equals area A. The rent generated by the restrictiveness of the second-tier tariff may be collected by either importers or exporters, depending on which has market power.

Other Differences

Figures 7-2 and 7-3 illustrate cases in which all of the rents associated with quantitative restraint accrue to the importing country (in the case of an domestically administered import quota) or the exporting country (a VER or a foreign-administered quota), respectively. A different situation occurs when exporters have sufficient market power to capture a portion of the rent generated by a domestically administered quota or, conversely, importers have sufficient market power to capture some portion of the rent generated by a foreign-held quota. This situation generally is referred to as rent-sharing. In this case, the c.i.f. price includes the portion of the total price increase generated by the quantity restriction that exporters are able to charge for the affected product; the remainder of the price increase is generated by importers.[10,11]

More generally, quantity restrictions such as quotas or VERs may result in sharp changes in prices over time as a result of changes in demand or supply conditions. For example, if supply or demand contract, the quota level, Q_1 may be greater than Q (figure 7-1). In this case, the quota is considered nonbinding; its tariff equivalent is equal to zero; and there is effectively no import restraint.[12] However, imperfect information regarding the "fill-rate" of a quota may have a deterrent effect on exporters,

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[8] If the importing government auctions the quota rights and if the quota auction market is competitive, the quota rents represented by B will be captured by the importing government as the prices paid by the importers for the import licenses should equal the unit value increases resulting from the quantity restriction (i.e., P_2-P_1).

[9] Tariff-rate quotas allow for the entry of a specific quantity of imports under a particular (first-tier) tariff rate and the entry of additional quantities of imports under a higher (second-tier) tariff rate.

[10] For a general discussion of the effects of market power, see Wendy E. Takacs, "Nonequivalence of Tariffs, Import Quotas, and Voluntary Export Restraints," *Journal of International Economics*, vol. 8, No. 4, (1978), pp. 565-73.

[11] As discussed in earlier chapters, evidence of rent-sharing exists for some of the U.S. sectors affected by quantitative restraints. For example, although quotas applied to imports of dairy products are domestically held, the simulations discussed in chapter 4 are based on the assumption that 50 percent of the rents accrue to foreign exporters. In contrast, MFA quotas are represented as foreign-held quotas (similar to the VERs applied to the auto sector). However, as discussed in chapter 3, empirical evidence suggests that some portion of the quota rents generated by the MFA quotas accrue to U.S. importers.

[12] See, for example, the discussion in chapter 3 regarding machine tools.

Figure 7-3
The effect of a tariff and a foreign-held quota
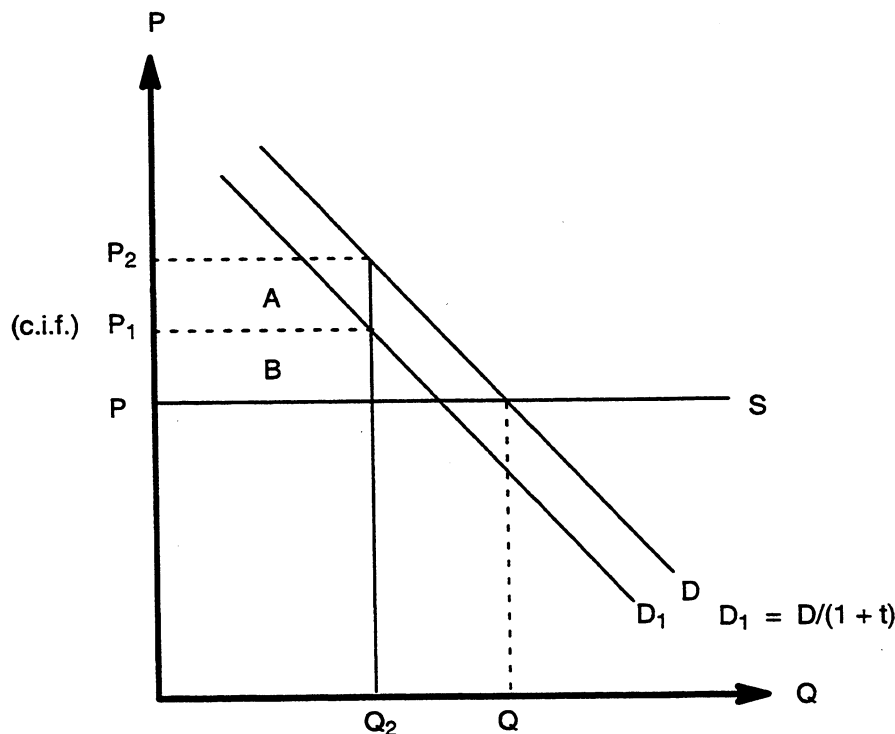
because of uncertainty as to whether goods shipped will actually be allowed entry into the importing country. If firms choose to forego shipments due to this uncertainty, prices rise as if the quota were binding at its official level. The point at which a quota becomes a binding constraint will depend on market conditions.[13]

Other economic differences between tariffs and quantitative restraints arise under uncertainty,[14] and when foreigners retaliate against import restraints by imposing import restraints of their own.[15] These differences fall outside the scope of the current study.

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[13] Sector-specific conditions regarding whether quotas are binding are examined in earlier chapters. See, for example, the sections covering quotas applied to textiles and apparel (chapter 3) and cotton (chapter 4).

[14] M.D. Pelcovits, "Quotas Versus Tariffs," *Journal of International Economics* vol. 6, No. 4 (1976), pp. 363-370.

[15] See for example, Carlos Alfredo Rodriguez, "The Non-Equivalence of Tariffs and Quotas under Retaliation," *Journal of International Economics* vol. 4, (1974), pp. 295-298.

Calculation of Measures of Trade Restrictiveness

Researchers have developed various ways of assessing the scope and restrictiveness of tariffs and NTBs. These include the use of descriptive statistical measures; the calculation of the effective rate of protection; econometric estimates of the openness of country markets and the impact of border measures on trade flows; the estimation of tariff, producer subsidy, and consumer subsidy equivalents; and the estimation of an index of trade restrictiveness called the trade restrictiveness index (TRI).

All of these approaches can be used to generate estimates of the economic effects of changes in barriers to trade. The choice of measure depends, in part, on the type of model or other form of economic analysis being used. For example, computable partial equilibrium (CPE) and computable general equilibrium (CGE) models frequently are constructed in such a way that tariff equivalents of the trade barriers under review are required in order to estimate the economic impact of changes in such policies. Since the economic analysis in the previous chapters

is based on either CPE or CGE models, the focus of the following sections is on various methods used to calculate tariff equivalents (TEs), problems related to the use of these methods, and a brief discussion regarding the TRI.[16]

Methods of Calculating TEs[17]

Price-Gap Method

Conceptually, the tariff equivalent (TE) of a NTB can be calculated as:

$$TE = (P_I - P_F)/P_F$$

where P_I is the price of the imported good observed in the importing country and P_F is the free-trade price of the product. When values for both prices are available, application of the above formula is referred to as the price-gap method. In the case of a domestic quota, these values should be the domestic price of the imported good net of the tariff and domestic distribution costs and the c.i.f. price.[18] In the case of a foreign quota (e.g., a VER), these values should be the customs value of the imported product and a foreign export price, with the appropriate adjustments made for transportation and distribution costs.[19] As discussed earlier in the report, this approach was used to estimate the TEs for all of the NTBs that were evaluated except sugar containing products and textiles and apparel.

In practice, this approach is complicated by the existence of product differentiation, imperfect competition, and limitations associated with data availability. NTBs such as quotas frequently apply to relatively broad categories of products that vary in type and quality.[20] Even in the case of relatively homogeneous agricultural products, quality differences and nonprice factors such as delivery uncertainties may contribute to price differentials. As a result, inappropriate comparisons of pricing data can lead to significant distortions in the estimated TEs.[21]

In some cases, the imposition of quantity restraints encourages product differentiation through quality upgrading. Although this, in and of itself, does not pose a particular problem for the type of comparative-static analysis conducted in this study, it generates problems for researchers interested in analyzing the effects of restraints over time.[22]

Although quality differences pose a particular problem for the implementation of the price-gap method, a more pressing problem is often the lack of reasonable pricing data. To overcome the limited availability of necessary data, researchers have developed alternative approaches that are discussed below.

Cost-Push Method

In situations where quotas are applied not only to imports of the targeted sector but also to imports of up- or downstream sectors (in order to inhibit quota evasion), it is possible to use the cost-push method, especially when only one TE measure exists. In the case where the price gap associated with an upstream product is available, the TE for a downstream product can be estimated based on the cost share of production of the restricted upstream input. In other words, the cost-push method essentially assumes that the upstream price gap is passed through to the target

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[16] Appendix F reviews other measures of restrictiveness.

[17] In addition to the methods discussed below, researchers have estimated what import demand or supply would have been under free trade and calculated TEs on the basis of these estimations. The data requirements for such estimations generally are more difficult to satisfy than those for the three approaches discussed in this section.

[18] In practice, the price of a domestically produced substitute good is often used to proxy P_I and the undistorted "world" price of the imported good is used for P_F. These prices generally require adjustments to account for differences related to product quality, packaging, and distribution.

[19] The foreign export price can by measured by either using export prices to unrestricted markets or be netting out the unit value increases accounted for by license prices (if the quotas are openly traded).

[20] Moreover, such restraints often result in quality upgrading.

[21] In particular, if such differences in quality and costs associated with transportation, inventory, and marketing have not been accounted for, the resulting TE will overestimate the price differential caused by the NTB. See, for example, Benoit-M. Papillon, "Measuring Non-Tariff Barriers to Differentiated Import Products," Contemporary Economic Policy, Vol. 12, No. 3 (1994), pp. 67-78.

[22] See, Bee-Yan Aw and Amy Hwang, "Quality Adjustment under Quotas in a Multiproduct Model with Joint Production," Scandinavian Journal of Economics, vol. 93, No. 4 (1991), pp. 555-69. Empirical work on quality upgrading includes: Bee-Yan Aw and Mark J. Roberts, "Measuring Quality Changes in Quota Constrained Import Markets: The Case of U.K. Footwear," Journal of International Economics, 21, 1986, pp. 45-60; and William R. Cline, The Future of World Trade in Textiles and Apparel (Washington DC: Institute for International Economics), 1987.

downstream industry. As discussed in chapter 4, this approach was used to estimate the TE for sugar containing products.

Two potential problems arise when this method is used. First, since the TE of the downstream product is based on a TE estimated for the upstream input, any distortions in the upstream TE would carry over to the TE for the downstream product. Second, if producers of the downstream product have market power, basing the TE on input cost shares will likely understate the price distortion caused by the restriction on imports of the downstream products.[23]

Quota Auction Price Method[24]

In cases where quota rights are auctioned or traded and the resulting prices are publicly available, those quota "prices" may serve as proxies for the price wedges caused by the quotas. This approach has been used by a number of researchers to estimate the TEs for textile and apparel imports under the Multifiber Arrangement (MFA).[25] The Commission used this approach to estimate TEs of U.S. import quotas for textile and apparel products in the current and 1993 studies, as described below.

As discussed in chapter 3, MFA quotas are administered by the foreign governments with which the United States has bilateral agreements or has imposed unilateral restraints. In the absence of information that indicates the existence of rent sharing, it is reasonable to assume that for imports covered by binding quotas, the U.S. import price represents the foreign country export price plus the quota rent (which in this case accrues to the foreign country).[26] The assumption that the prices of openly traded quotas reflect the value of the quota rents results in:

$$P^e = P^{cv} - A$$

where P^e is the foreign country export price, P^{cv} is the U.S. customs-value import price, and A is the auction price of the quota. The TE of the quota is then calculated as:

$$TE = (P^{cv}/P^e) - 1 = A/P^e.$$

In the current and 1993 studies, the Commission used average Hong Kong quota prices based on weekly pricing data for the entire year to calculate the estimated Hong Kong export prices and ad valorem tariff equivalents for the respective quota categories.[27] When prices were not available for specific quota categories, average prices were estimated. TE estimates for U.S. imports from the remaining countries subject to MFA quotas were also derived from the estimated Hong Kong export prices.[28] In particular, it was assumed that:

$$P^e_o = (W_o/W_{hk})(go_{hk}/go_o)P^e_{hk}$$

where P^e_o equals the export price of the other exporter country, W_o equals labor costs for apparel in the other exporter country, W_{hk} equals labor costs

[23] See, for example, Andrew R. Moroz with Stephen L. Brown, "Grant Support and Trade Protection for Canadian Industries," Institute for Research on Public Policy, Ottawa, Apr. 1987.

[24] Although the discussion in this section is limited to the application of this approach to U.S. restraints on imports of textiles and apparel, the use of quota auction prices to proxy for the price gaps associated with quantitative restraints has been applied elsewhere. See, for example, C. Fred Bergsten, Kimberly Ann Elliott, Jeffrey J. Schott, and Wendy E. Takacs, Auction Quotas and United States Trade Policy (Washington DC: Institute for International Economics), 1987.

[25] Carl B. Hamilton, "Restrictiveness and International Transmission of the 'New' Protectionism," in Robert E. Baldwin, Carl B. Hamilton, and Andre Sapir eds, Issues in US-EC Trade Relations (Chicago: The University of Chicago Press, 1988), 199-224; and Irene Trella and John Whalley, "Global Effects of Developed Country Trade Restrictions on Textiles and Apparel," The Economic Journal, vol. 100 (Dec. 1990), 1190-1205. Anderson and Neary also use quota prices to proxy for quota rents in their analysis of the MFA. Their work differs from previous research as well as the research contained in the present study as it relies on the trade restrictiveness index rather than trade-weighted aggregation methods. See, Anderson and Neary, "Trade Restrictiveness", 1994, pp. 171-189.

[26] This is contingent on the assumption that there is no rent sharing. In addition, the unit values (reported on a customs value basis) reported for nonrestricted U.S. imports are roughly equivalent to the foreign country export price.

[27] As noted earlier, U.S. quotas on textiles and apparel are administered by the exporting country governments. Generally, these governments allocate quotas on the basis of past production, rather than open-market trading. As a result, quota auction pricing data (or any other type of quota pricing data) are quite limited. Thus, much of the research on trade in textiles and apparel has relied on Hong Kong auction prices as these prices are publicly available. During the early 1980s, quota auction prices were available for exports of textiles and apparel from Taiwan. See Carl B. Hamilton, "Restrictiveness and International Transmission of the 'New' Protectionism," 1988. See also, Rajiv Kumar and Sri Ram Khanna, "India, The Multi-Fibre Arrangement and the Uruguay Round," in Carl Hamilton, ed., Textiles Trade and the Developing Countries, (Washington DC: The World Bank), 1990, pp. 182-214, for estimates of the TEs of Indian exports of textiles and apparel to selected country markets.

[28] See also, Trela and Whalley, "Global Effects of Trade Restrictions," 1990.

for apparel production in Hong Kong, go_o represents the value of gross output per worker in the other exporter country, go_{hk} represents the value of gross output per worker in Hong Kong, p^e_{hk} equals the Hong Kong export price. An estimated ad valorem tariff equivalent was calculated based on the difference between the estimated foreign country export unit value and the U.S. import unit value (measured on a customs value basis). These estimates were aggregated on a country and trade-weighted basis, taking into account (at each step) whether the trade was restricted by binding quotas.[29]

There are several potential sources of bias associated with this approach. For instance, the degree to which the quota prices are reasonable proxies for the price wedges being measured depends on market conditions in the quota auctions. Specifically, auction prices are likely to be good proxies for the price gap under conditions of perfect competition; when auction markets are imperfectly competitive, the quota auction prices may capture some monopoly profits as well.[30] In addition, international differences in the labor intensity of production, or international product differentiation, may bias the imputed supply prices of countries other than the country in which the quota auction takes place, either upward or downward.

Methods Used to Adjust for Differences in Quality

Because of its potential significance, measurement error associated with quality differentials has been of particular concern to researchers. There is a substantial body of research concerning methods used to quantify price differences due to quality, also known as "hedonic pricing."[31] These methods can be

used to adjust for quality-based price differences such as those associated with differences in national origin. For example, if it is necessary to compare the price of a domestically produced good to the "distorted" price of the restricted imported good, after adjusting for quality differences, the TE can be calculated by modifying the basic price-gap equation as follows:

$$TE = [\{P_d / (1 + q)\} - P] / P.$$

P_d is the price of the domestically-produced product, P is the price of the imported product, and q is the ad valorem quality premium of the domestic product relative to the imported product.[32] Two potential ways to calculate quality premia are discussed below.

Matched-pair Method

If the only difference in products to be compared is a difference of national origin, and if no other significant factors are believed to influence the relative prices of these goods, then a proportionate quality premium between goods from country a and country b can be estimated as

$$q = T^{-1} \sum_{t=1}^{T} \frac{P_a}{P_b}$$

which is the simple average of the observed quality premia over a number of time periods. Calculating the quality premium in this way effectively controls for fluctuations in market conditions which are specific to time periods and which affect the price of both products proportionately. The estimate of q

[29] For a complete discussion of this method, see USITC, *Import Restraints*, 1993, pp. 11-21 and app. E.

[30] See, for example, Kala Krishna, "The Case of the Vanishing Revenues: Auction Quotas with Monopoly," *The American Economic Review*, vol. 80, No. 4, 1990, pp. 828-836 and Kala Krishna, "Theoretical Implications of Imperfect Competition on Quota License Prices and Auctions," *The World Bank Economic Review*, vol. 7, No. 1, 1993, pp. 113-136. See also, the discussion of this issue in James A. Anderson and J. Peter Neary, "The Trade Restrictiveness of the Multi-Fibre Arrangement," *The World Bank Economic Review*, vol. 8, No. 2., 1994, pp. 177-8.

[31] See, for example, Zvi Griliches, "Hedonic Price Indexes for Automobiles: An Econometric Analysis of Quality Change," in Zvi Griliches, ed., *Price Indexes and Quality Change* (1971), Cambridge, Mass.: Harvard

[31]—*Continuned*
University Press, pp. 55-87; Sherwin Rosen, "Hedonic Prices and Implicit Markets: Product Differentiation and Pure Competition," *Journal of Political Economy* vol. 82 No. 1 (Jan.-Feb. 1974), pp. 34-55 and Jack Triplett, "Concepts of Quality in Input and Output Price Measures: A Resolution of the User Value-Resource Cost Debate", in Murray F. Foss, ed., *The U.S. National Income and Product Accounts: Selected Topics*, NBER Studies in Income and Wealth, vol. 47 (1983), Chicago: University of Chicago Press.

[32] Note that it does not matter whether the quality premium is used to discount the price of the higher priced good or to increase the price of the lower-priced good (i.e. one could leave P_d as is and increase P to P(1+q)), nor does it matter whether q is positive or negative. A negative value for q indicates a quality discount. If the quality premium is estimated as a specific per unit increase in the price of the higher valued good, then the term (P_d - q) replaces $\{P_d / (1+q)\}$ in the above formula.

improves with the number of time periods available (T), but it is susceptible to error if the underlying tastes of buyers have changed.

Hedonic Regression

Regression methods may be used to identify national quality premia when observed variables other than national identity of the supplier need to be held constant.[33] A typical hedonic regression for national quality premia in semi-logarithmic form is

$$\ln p_{it} = C + \sum_{i=1}^{n} q_n D_n + \sum_{j=1}^{m} \beta_j X_j,$$

where P_{it} is the price of the good produced in country i and sold in time period t in the free-market location, D_n are binary variables for the countries of origin, and X_j are control variables which may vary with time or otherwise. The q_n are the estimated quality premia (discounts if negative) in proportional terms, relative to the base country. The X_j may include annual or seasonal dummies, and dummies for unusual spikes in the market. In some methods, additional dummy variables are introduced to permit direct derivation of price indices. Applied research in this area encompasses a variety of products. Recent examples include Raboy and Simpson (peanuts) and Feenstra (automobiles and light trucks).[34]

In the present study, potentially useful applications of methods for quality adjustment were hampered by the limitations of the available data. In the case of peanuts, for example, Raboy and Simpson compare the price of Argentine and Chinese peanuts in the Rotterdam market with a constructed price of the

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[33] Hedonic regressions may take a number of functional forms, the most common being linear, double-logarithmic, or semi-logarithmic.

[34] David G. Raboy and Teri Simpson, "A Methodology for Tariffication of Commodity Trade in the Presence of Quality Differences - The Case of Peanuts," *The World Economy*, vol. 15 no. 2 (March 1992), pp. 271-281; Robert C. Feenstra, "Gains from Trade in Differentiated Products: Japanese Compact Trucks," in Robert C. Feenstra, ed., *Empirical Methods for International Trade* (1988), Cambridge, Mass.: MIT Press, pp. 119-136; and Robert C. Feenstra, "Quality Change in U. S. Autos," in Jagdish Bhagwati ed. *International Trade: Selected Readings*, 2nd edn (Cambridge MA: M.I.T. Press), 1988;

same peanuts imported into the United States, based on the U.S. in-shell support price minus an estimated quality premium. The present study compares the prices of U.S.-grown peanuts sold in the U.S. and Rotterdam markets directly. The relatively small number of shipments of imported peanuts in 1993 came from a variety of sources. Adopting Raboy's estimate of a 28-percent quality discount for Chinese peanuts, U.S. peanut imports from other sources in 1993 (Singapore, Hong Kong and Taiwan) sold at an estimated 70 percent premium to the price of U.S.-grown peanuts. This suggests that these shipments contain at least some re-imports of exports of U.S.-grown "additional" peanuts (see chapter 4), thus rendering the calculation of a quality-adjusted price for U.S. imports problematic. The market impact of the U.S. import restriction can be observed in the difference between the prices of U.S.-grown peanuts in U.S. and foreign markets, which is measured on the basis of much larger and more homogeneous flows than the import prices.

Problems Associated with Aggregation

As reported in previous chapters, import quantity restrictions are represented on a sector-by-sector basis in the USITC CGE model through the use of ad valorem equivalent price differences (wedges) between world and U.S. domestic prices. Although the USITC CGE model distinguishes 491 individual production sectors in the U.S. economy, these sectors remain broad enough to often require the aggregation of multiple products into a single sector. Tariff equivalents are estimated for the individual products within a sector and then aggregated to estimate a single tariff equivalent for the entire sector. Trade-weighted averaging is the aggregation technique used throughout this report.

Although trade-weighted averaging is commonly employed by researchers, there are limitations associated with this approach. Imports of a product are influenced by the types and levels of import relief afforded the product, so import shares that are used to weight the level of protection are themselves affected by the level of protection. For example, when trade-weighted averaging is used to calculate the average tariff for two very similar products and the tariff on the first is twice as large as the second, the estimate is generally biased downward because imports of the product with a low tariff are depressed relatively little by the tariff, whereas imports of the product with a high tariff are depressed relatively

more. The aggregation shares reflect this distortion so the product with a low tariff has a relatively higher weight and the product with a high tariff has a smaller weight than each would have if there were no tariffs.[35]

Alternatives to trade-weighting include aggregations based on domestic production or consumption shares. Although these approaches may reduce the inherent downward bias associated with trade weighting, they may introduce distortions of their own.[36] A new technique, the trade restrictiveness index (TRI), has been developed in response to these aggregation problems. It is discussed in the following section.

The Trade Restrictiveness Index

The TRI was developed by James Anderson and Peter Neary.[37] Its purpose was to measure the level of restrictiveness in an economy subject to a set of import restraints. The TRI was developed as an economywide summary measure of trade restrictiveness that can be used as an alternative to other economywide measures of tariffs and tariff equivalents. In particular, its initial application was to act as an alternative to average measures of protection that employ aggregation methods such as trade, production, or consumption weighting.

The primary advantage of the TRI is that it embodies an aggregation procedure derived from general equilibrium conditions rather than ad hoc aggregation methods (such as trade-weighting). The latter techniques are empirically simple, but are generally not consistent with equilibrium conditions. As a result, the use of ad hoc aggregation methods to identify the welfare effects of a change in government policy may impose significant distortions relative to the correct measure.

The TRI is related to the methods used in this study because it combines a set of import relief measures into a single number that summarizes the

level of restrictiveness at an economywide level. However, the measure has also been adapted to describe the degree of restrictiveness of tariffs and quotas at an industry level.[38] The relevance of the TRI to this study is that it can be adapted to complement the calculation of sector-specific TEs (from the methods described in the previous sections) by providing a more appropriate aggregation procedure when multiple product-specific tariff equivalents are combined in the estimate of a sector-specific tariff equivalent. Although Commission staff explored the possibility of using an adaptation of the TRI in this report, data constraints prevented this analysis.[39] However, it may be possible to make use of the TRI in future studies.

Overview of the TRI

Although the TRI can be used to identify an economywide estimate of the change in trade restrictiveness, it does not directly reflect changes in employment, output, imports, and exports. In this respect, as a measure of import restrictiveness, it is closely related to a calculation of the average tariff equivalence of the combined tariffs and import quantity restrictions that exist in an economy.[40]

The TRI can be used to compare the structure of trade barriers over time, or it can be used to analyze and compare two different sets of restrictions. The focus of this study is on the latter analysis, since the model simulations estimate the economic effects of trade restraints by comparing the case when restraints are in place relative to the case when they are reduced.

Like a true cost-of-living index that adjusts prices to hold utility constant between two states, the TRI is a scalar (single number) that identifies a uniform adjustment to a group of affected import prices in

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[35] The level of protection is only one characteristic that influences the weighting shares. Import demand elasticities also influence the direction and magnitude of the weights.

[36] For example, if the composition of a country's imports and its production differ significantly, aggregating on the basis of domestic production or consumption will also generate distorted average measures.

[37] See, for example, James Anderson and Peter Neary. "Measuring the Restrictiveness of Trade Policy." *World Bank Economic Review*, vol. 8 No. 2, (1994a) pp. 151-69.

[38] A TRI has been calculated for the MFA textile and apparel sectors. This was done assuming separability between these products and the remainder of the economy. James Anderson and Peter Neary. "The Trade Restrictiveness of the Multi-Fibre Arrangement." *World Bank Economic Review*. vol. 8, No. 2, (1994b), pp.139-57. The technical derivation relies heavily on this approach.

[39] Commission efforts to use the TRI are described in the section, Calculation of TRI Measures of Tariff Equivalents, of this chapter.

[40] The CGE model that is employed in this report uses a measure of net welfare to identify the economywide effects of import liberalization and uses the changes in output, employment and trade to gauge the sector-specific effects.

order to retain the utility level in the initial state. If a policy change (e.g. increasing proportionately the ad valorem tariff equivalents of a set of trade barriers) is uniform across the range of goods affected, the calculation is trivial and the TRI is equal to the uniform ad valorem tariff equivalent. However, when there is variance in the magnitude and direction of the policy changes across products, the index is a scalar representation of the nonuniform change in import prices between the two states.

The TRI was developed to facilitate a comparision between two economic states, and the index is most meaningful when compared between states. Because it is the changes that are of interest, the level of the index need not be calculated. Instead, the changes can be calculated directly, and are illustrated below. In general, the index rises if there is an increase in the aggregate level of protection between states and it falls if the aggregate level of protection falls. If the index remains unchanged, aggregate protection is equivalent in the two states and no price adjustments are required to obtain the initial level of utility.

The main difference between the aggregation that is contained in the TRI and the more commonly used measures such as trade weighting is that the TRI aggregates based on *changes* in variables rather than on the initial levels of variables that are impacted by a policy shift. For example, the elimination of a one-percent tariff might be weighted by the share of total trade that currently exists for that good, or it could be weighted by the share of the total change in trade that is due to that good. Trade-weighting is described by the first case and the TRI is analagous to the second case. The aggregation procedure within the TRI is based on the share of the total change in utility that is due to relaxing an individual sector's import restrictions.

The following section describes the mechanics of the TRI and illustrates the adaptation that was developed for this study. The next section describes the *a priori* methodology used to choose sectors to which this measure was to be applied in the study.

Technical Derivation of the TRI

The TRI is derived from a reduced form representation of an economywide equilibrium in which all markets clear simultaneously.[41] The USITC

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[41] Individual sectors can be focused upon with the appropriate separability assumptions concerning expenditure, leaving partial TRI calculations for individual products, however the separability conditions allow this

CGE model represents trade restrictions in the form of tariff equivalents, so the general form of the TRI must be reinterpreted to represent an aggregate TE rather than an aggregate tariff adjustment. In this context, the TRI methodology potentially provides an alternative type of aggregation of tariff equivalents for model sectors which are used to represent quantity restrictions.[42] If we begin with the current state of protection and a TRI index equal to one, the proportional change in the TRI as we move to free trade is equal to the inverse of a scalar ad valorem factor equivalent $(1/(1+TE))$ of the unequal levels of protection placed on a set of goods.[43]

The following is a derivation of the adaptation of the TRI aggregation that can be used with the USITC CGE model.[44] A reduced form representation of general equilibrium is defined by a new tool called a 'balance of trade function.' This function (denoted $B(p,u)$) identifies the foreign exchange required to attain a utility level, u, while facing a set of prices denoted by p. Implicit in this function are unchanged tastes, technology, a fixed trade deficit/surplus, and other variables that characterize a general equilibrium for the economy. The $B(p,u)$ function is defined as follows:

$$B(p,u) = e(p,u) - c(p), \qquad (1)$$

where $e(p,u)$ is the aggregate domestic production (GDP) and $c(p)$ is aggregate consumption. This can be rewritten as:

$$B(p,u) = E(p,u) - (p - p^*)m(p) - D, \qquad (2)$$

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[41]—*Continued*
partial calculation to retain consistency with a general equilibrium. See James Anderson and Peter Neary. "Trade Reform with Quotas, Partial Rent Retention, and Tariffs." *Econometrica*, vol. 60, No. 1 (Jan. 1992), pp. 57-76.

[42] The index can be defined over prices or quantities depending on whether the policy is a tariff or quota, respectively. However, because the USITC CGE model does not model quantity restrictions explicitly, the quota form of the TRI is replaced by a measure of the tariff equivalent of the quantity restrictions. This adaptation requires an assumption that the tariff equivalent accurately represents the effects of a quota. In particular, the latter assumption requires that all quota rents are captured by the importing country.

[43] Using earlier notation, TE represents the ad valorem tariff equivalent of an import quantity restriction.

[44] In describing the derivation, the basic pieces of the TRI are described only briefly. The interested reader may refer to the original articles to review the additional theoretical issues associated with this measure.

where $E(p,u)$ is domestic expenditure, $m(p)$ is a vector of import demand, p is a vector of prices for imports faced by domestic consumers, p^* is a vector of world (free trade) prices, and D is a trade surplus/deficit that is assumed constant. If the only form of trade restrictions are tariffs, then the price differences $(p - p^*)$ would be equal to the tariff. In equilibrium, this relationship is equal to zero. This holds in all equilibrium states, so:

$$B(p_0,u_0) = B(p_1,u_1) = 0, \tag{3}$$

where subscripts zero and one reflect states with import restrictions (0) and free trade (1), respectively. The TRI (denoted R) is the scalar index by which prices affected by import restrictions are adjusted to satisfy the following relationship:

$$R(p_1,u_0) = [R: B(p_1/R,u_0) = 0]. \tag{4}$$

That is, the value R is a uniform deflator applied to prices in the second state in order to bring the economy to the initial level of utility, holding constant the initial trade surplus/deficit.[45]

Beginning with an index (R) equal to one, the proportional change can be derived to represent the uniform tariff equivalence of a dispersed set of tariff equivalents. Rather than assuming specific functional relationships and deriving the value of the index in the two periods, the percent change can be derived as a weighted average of the percentage changes in the individual price distortions:[46]

$$\%\Delta R = \Sigma_i (s(i) * \%\Delta p), \tag{5}$$

where $s(i)$ represents the weight with which the ith good is aggregated and $\%\Delta$ indicates a percentage change in the following variable.

Equation (5) is in a general form and shows the similarity between the aggregation used in the TRI and trade-weighted average. The principle difference between the two is the weights that are used in aggregating measures of trade protection. For trade-weighting, $s(i)$ is the initial share of total imports over which the aggregation is conducted. The TRI weights are derived by differentiating equation (4) to obtain:

$$s(i) = (B_{p(i)} \, p(i) \,)/(\Sigma_j \, B_{p(j)} \, p(j)). \tag{6}$$

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[45] This representation illustrates the similarity between this index and an ideal price deflator.

[46] See James Anderson and Peter Neary, (1994b).

This equation can be rewritten in a more intuitive representation using the following notation and properties:

(a) a variable subscript denotes a partial derivative with respect to the subscripted variable;

(b) $B_p(i) = (p_1(i) - p^*(i))m_p(i)$;

(c) $\varepsilon(i)$ is the elasticity of import demand with respect to the price of the ith product's imports; and

(d) $k(i)$ is the ratio $(1/(1+TE(i)))$.

To operationalize equation (6), four pieces of information are required. These include the price of imports in the state with protection, the world price, the tariff equivalence of the quantitative restriction in place of individual products and the own-price elasticity of import demand.[47] Algebraic manipulation of equation (6) and substitution using the notation and properties (a)-(d) yields shares for the TRI of the form:

$$s(i) = [k(i)\varepsilon(i)p_0(i)q_0(i)]/[\Sigma_j (k(j)\varepsilon(j)p_0(j)q_0(j))]. \tag{7}$$

The weights, $s(i)$, in this case represent the share of the marginal cost of foreign exchange required as a result of each good relative to the total change in foreign exchange required by the policy change. Since these shares are based on marginal changes rather than levels, the problems associated with policy changes endogenously dampening the shares of more restrictive barriers are mitigated by this measure.

Calculation of TRI Measures of Tariff Equivalents

In an attempt to compare the magnitude of the distortion that may exist as a result of using trade-weighted averaging, Commission staff sought to calculate sectoral tariff equivalents for two agricultural products using the standard methodology and to compare this calculation to a measure derived from the method adapted from the TRI calculation. Two products were chosen for this analysis: meat and cotton. These products were chosen because each is an agricultural commodity, which makes the product market characteristics of these goods consistent with some of the important assumptions used to derive the TRI.[48] In addition, these two sectors are composed

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[47] Because the products being aggregated are very narrowly defined, the elasticity of demand generally is the most difficult of the information requirements.

[48] The adaptation of the TRI described above assumes a world price that is given, meaning the import supply curve is flat. This is most likely to occur with agricultural products, so this type of good was chosen for the analysis.

of a distinct group of products that are potentially subject to different levels of import protection. The meat sector includes beef, lamb, and pork; the cotton sector contains three distinct grades of cotton imports.[49]

These sectors were selected *a priori* based on the consistency of their import and product characteristics and the assumptions required of the TRI calculation. However, neither sector lent itself to the alternative

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[49] Commission staff also considered applying the TRI analysis to textiles and apparel. Although this approach may be used in future staff research, data limitations precluded adaptation of this approach in the current study.

analysis in 1993. In each case, only one individual product in the sector was subject to significant important restrictions, thereby effectively inducing an aggregation of nonzero tariff equivalents over one product. The remaining products in the sectors had either a zero tariff equivalent or no imports. In the meat sector, boneless frozen meat of bovines was responsible for all of the quantity restricted imports. Virtually all the 1993 cotton imports occurred within the medium staple length quota categories, so, although there may have been import barriers that were prohibitive for the other two categories of cotton, the imports were insufficient for TRI-based calculations.

COMMISSIONER COMMENTS

Views of Chairman Peter S. Watson
and Commissioner Carol T. Crawford

A number of questions have recently been raised in regard to the methodology utilized in this report. It is for that reason that we include the following explanation of the economic modeling that is used.

The economic modeling used is by the request of the United States Trade Representative (USTR). Specifically, USTR requested that this report should use partial-equilibrium and general-equilibrium frameworks to analyze the effects of trade liberalization in individual U.S. sectors and to assess the economy wide effects of the simultaneous liberalization of all U.S. sectors covered (see appendix A).

The quantitative methods that are applied in this report are solidly grounded in standard, mainstream economic analysis. The models that are used are well established and accepted by numerous government agencies to analyze trade policy issues. For instance, similar models have been used to examine trade policy issues by the U.S. Department of Agriculture, the U.S. Department of Labor, and by the Industry Commission of Australia, as well as other international organizations such as the World Bank, the WTO and the OECD. In addition, other economic models are maintained by a multitude of U.S. government agencies and private-sector firms to examine a wide variety of issues.

Whether explicitly stated or not, all analyses of economic policy issues, both those that use standard frameworks and those that do not, rely on (1) simplification, (2) assumptions, (3) some theory or depiction of how the economy functions, and (4) data. The use of economic models provides a rigorous and logically coherent means of examining these issues. Economic models also provide the framework for checking the assumptions and the data that are used as well as providing the basis for a rigorous criticism of their results.

Policy makers well recognize that economic models are not infallible and that common sense, sound judgement, and careful scrutiny must be used when interpreting and using the results of models. In this light, formal models are superior to unstructured, judgmental, and often-uninformed conclusions. The fact that a multitude of government agencies and private-sector firms continue to rely on economic models for informed advice on economic issues validates their usefulness.

Views of Commissioner Don Newquist

Commissioner Newquist notes that "economic modelling" is essentially an exercise in untested, unverifiable, and often unrealistic theory. At its base level, economic modelling is nothing more than the manipulation of "data" and often vague or unspecific "variables." Underlying the data collection and identification of variables is the individual modeler's prejudices and subjective assumptions.

Thus, individuals measuring the impact of a particular event or occurrence, may employ completely different assumptions and focus on different variables—to say nothing of "ranges" within the assumptions and variables. Likewise, the quality and representativeness of data collected must be assessed and acknowledged.

Commissioner Newquist does not dispute that the model results herein may represent a particular manipulation of available data using certain assumptions. However, given the expressed limitations of the modelling exercise, he questions the extent to which policy decisions should be based on these manipulations. Particularly where, as here, the models attempt to measure events that did not, in fact, occur.

For further discussion of Commissioner Newquist's view regarding economic modelling, particularly its limitations, *see, The Economic Effects of Antidumping and Countervailing Duty Orders and Suspension Agreements*, Inv. No. 332-344, USITC Pub. 2900 at XI ("Views of Commissioner Don Newquist")(June 1995); *see also, Potential Impact on the U.S. Economy and Industries of the GATT Uruguay Round Agreements, Volume I*, Inv. No. 332-353, USITC Pub. 2790 at I-7, n.17 (June 1994); *Potential Impact on the U.S. Economy and Selected Industries of the North American Free-Trade Agreement*, Inv. No. 332-337, USITC Pub. 2597 at 1-6, n.9 (January 1993).
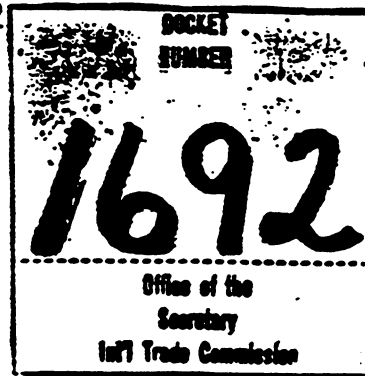
APPENDIX A

Request Letter

THE UNITED STATES TRADE REPRESENTATIVE
Executive Office of the President
Washington, D.C. 20506

MAY 15 1992

The Honorable Donald E. Newquist
Chairman
U.S. International Trade Commission
500 E Street, S.W.
Washington, D.C. 20436

Dear Mr. Chairman,

The Commission's recent series of reports on the economic effects
of significant U.S. import restraints (USITC publication 2222,
dated October 1989; publication 2314, dated September 1990; and
publication 2422, dated September 1991), prepared pursuant to a
request from the Senate Committee on Finance dated September 12,
1988, has been an excellent source of objective, balanced
information for the entire trade policy community. An
understanding and appreciation of the economic implications of
restraints imposed on trade are critical to any informed
assessment of the trade policy options that confront the
President and the Congress.

We would find it useful to have periodic updates of the types of
assessments that the Commission has provided in its reports for
the Finance Committee. Therefore, under authority delegated by
the President and pursuant to section 332(g) of the Tariff Act of
1930, as amended, I request that the Commission periodically
provide an updated assessment of the economic effects of
significant U.S. import restraints. Each updating report should
include quantitative assessments of the restraints' effects on
U.S. consumers, on the activities of U.S. firms, on the income
and employment of U.S. workers, and on the net economic welfare
of the United States. The reports also should continue the broad
analytical frameworks used in the original reports, namely
partial equilibrium frameworks for the analysis of liberalization
in individual sectors and a general equilibrium framework for
assessment of the economy-wide effects of the simultaneous
liberalization of all sectors covered.

With the exceptions noted below, the reports should consider the
effects of all significant restraints on U.S. imports of goods
and services whether they result from an act of Congress, an
action taken under the fair trade laws of the United States (such
as section 201 investigations), an international agreement, or
voluntary export restraints by foreign nations. The reports
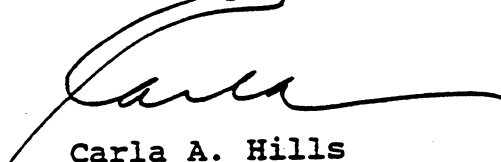should not include import restraints resulting from final

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antidumping or countervailing duty investigations, section 337 or 406 investigations, or section 301 actions.

I would appreciate receiving the first updating report 18 months after receipt of this request. Subsequent reports should be provided thereafter at intervals of approximately two years until otherwise instructed.

In view of the outstanding instruction to the Commission on the security classification of reports prepared by the Commission at the request of the U.S. Trade Representative, I request that all reports on this investigation be made available to the public at the same time they are submitted to my office.

The Commission's assistance in this matter is greatly appreciated.

Sincerely,

Carla A. Hills

APPENDIX B

Federal Register Notice and List of Submissions

supplemental hearing in this matter will commence at 9:00 a.m. on January 23, 1995, in Courtroom C (Room 217), U.S. National Trade Commission ing, 500 E St. S.W., Washington.

The Secretary shall publish this notice in the Federal Register.

Issued: January 6, 1995.

Janet D. Saxon,

Administrative Law Judge.

[FR Doc. 95–679 Filed 1–10–95; 8:45 am]

BILLING CODE 7020–02–P

[Investigation No. 332–325]

The Economic Effects of Significant U.S. Import Restraints: First Biannual Update

AGENCY: United States International Trade Commission.

ACTION: Notice of schedule for biannual update report.

SUMMARY: The letter of May 15, 1992, from the United States Trade Representative (USTR) requesting that the Commission institute the above referenced investigation also requested that the Commission prepare biannual update reports, to be submitted on the 2-year anniversary dates of the ·hmission of the first report. The first rt was submitted on November 15, J. This is the first such update and ll will be submitted to USTR by November 15, 1995.

EFFECTIVE DATE: December 23, 1994.

FOR FURTHER INFORMATION CONTACT: Hugh Arce on (202) 205–3234, Office of Economics, U.S. International Trade Commission. Hearing impaired persons are advised that information on this investigation can be obtained by contacting the Commission's TDD terminal on (202) 205–1810.

SUPPLEMENTARY INFORMATION: As requested in the USTR's letter of May 15, 1992, the Commission in its update reports will, as was done in the first report, assess the economic effects of significant U.S. import restraints on U.S. consumers, on the activities of U.S. firms, on the income and employment of U.S. workers, and on the net economic welfare of the United States. The investigation will not include import restraints resulting from final antidumping or countervailing duty investigations, section 337 or 406 investigations, or section 301 actions.

Notice of institution of this · ·vestigation was published in the eral Register of June 17, 1992 (57 FR ,63).

Written Submissions

The Commission does not plan to hold a public hearing in connection with the first biannual update of this report. However, interested persons are invited to submit written statements concerning the matters to be addressed in the report. Commercial or financial information that a party desires the Commission to treat as confidential must be submitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. (Generally, submission of separate confidential and public versions of the submission would be appropriate.) All submissions requesting confidential treatment must conform with the requirements of § 201.6 of the Commission's Rules of Practice and Procedure (19 CFR 201.6). All written submissions, except for confidential business information, will be made available in the Office of the Secretary to the Commission for inspection by interested persons. To be assured of consideration, written submissions must be filed by June 15, 1995.

Issued: January 5, 1995.

By order of the Commission.

Donna R. Koehnke,

Secretary.

[FR Doc. 95–680 Filed 1–10–95; 8:45 am]

BILLING CODE 7020–02–P

INTERSTATE COMMERCE COMMISSION

[Finance Docket No. 32569]

Burlington Northern Railroad Company—Construction and Operation Exemption—Butler and Platte Counties, NE

AGENCY: Interstate Commerce Commission.

ACTION: Notice of Exemption.

SUMMARY: Under 49 U.S.C. 10505, the Interstate Commerce Commission conditionally exempts from the prior approval requirements of 49 U.S.C. 10901 the construction and operation by the Burlington Northern Railroad Company of 4.3 miles of track and the operation over an additional 1 mile of track, in Butler and Platte Counties, NE.

DATES: The exemption will not become effective until the environmental process is completed. At that time, the Commission will issue a further decision addressing the environmental matters and establishing an exemption effective date, if appropriate. Petitions to reopen must be filed by January 31, 1995.

ADDRESSES: Send pleadings referring to finance Docket No. 32569 to: (1) Office of the Secretary, Case Control Branch, Interstate Commerce Commission, 1201 Constitution Avenue, NW., Washington, DC 20423; and (2) Petitioners' representative: Pete M. Lee, 3800 Continental Plaza, Fort Worth, TX 76102.

FOR FURTHER INFORMATION CONTACT: Beryl Gordon, (202) 927–5610. [TDD for the hearing impaired: (202) 927–5721.]

SUPPLEMENTARY INFORMATION: Additional information is contained in the Commission's decision. To purchase a copy of the full decision, write to, call, or pick up in person from: Dynamic Concepts, Inc., Interstate Commerce Commission Building, 1201 Constitution Avenue, NW., Room 2229, Washington, DC 20423. Telephone: (202) 289–4357/4359. [Assistance for the hearing impaired is available through TDD services (202) 927–5721.]

Decided: December 22, 1994.

By the Commission, Chairman McDonald, Vice Chairman Morgan, and Commissioners Simmons and Owen.

Vernon A. Williams,

Secretary.

[FR Doc. 95–676 Filed 1–10–95; 8:45 am]

BILLING CODE 7035–01–M

DEPARTMENT OF JUSTICE ·

Office of Justice Programs

Office of Juvenile Justice and Delinquency Prevention

[OJP NO. 1037]

ZRIN 1121–ZA04

Addendum to Proposed Comprehensive Plan for Fiscal Year 1995

January 5, 1995

AGENCY: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

ACTION: In accordance with Section 204(b)(5)(B) of the Juvenile Justice and Delinquency Prevention Act of 1974, as amended, 42 U.S.C. 5601 *et seq.*, public comments on the Office of Juvenile Justice and Delinquency Prevention's Proposed Comprehensive Plan for Fiscal Year 1995, published in the Federal Register on December 30, 1994, are due forty five days from the date of publication. This notice provides the due date for comments on the Federal Register Notice, Volume 59, No. 250, pages 68080–68102.

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SUBMISSIONS FOR THE RECORD
INVESTIGATION NO. 332-325

Alan F. Holmer of Sidley and Austin, on behalf of Anchor Hocking Glass Company.

Randolph J. Stayin of Barnes and Thornburg, on behalf of Indiana Glass Company.

Terence P. Stewart of Stewart and Stewart, on behalf of Libbey, Inc.

APPENDIX C

The USITC CGE Model

This appendix provides a technical description of the USITC CGE model, including an overview of how it works, current model specification, and discussion of how it analyzes significant import restraints.

Overview of How the USITC CGE Model Works

Computable general equilibrium models, such as the USITC CGE model, simulate interactions among producers and consumers within an economy in markets for goods, services, labor, and physical capital. The distinguishing feature of a CGE model is its economywide coverage and multisectoral nature. A CGE model explicitly accounts for upstream and downstream production linkages, intersectoral competition for labor and capital, and exchange rate changes. A growing body of evidence suggests that these indirect effects of import restraints can be significant.

The USITC CGE model has three main components: (1) a social accounting matrix (SAM), (2) a behavioral parameter data set, and (3) a system of equations that constitute the model specification. The SAM is the empirical data base for the CGE model that specifies the transactions among the various economic units involved in the U.S. economy for the base year in this study, 1993. The majority of the SAM is composed of the estimated input-output accounts for 491 sectors[1] in agriculture, mining, manufacturing, and services, which detail the transactions that occur between industrial sectors, such as the purchase of steel by the automotive sector. In addition to these input-output accounts that capture interindustry linkages, other information such as trade data, government transactions, and household transactions are incorporated into the SAM and are reconciled with the 1993 national income and product accounts (NIPA). By this process, a consistent set of detailed transactions between firms, households, government, and other domestic and foreign institutions are generated for the base year, 1993.

While the SAM provides information on the initial equilibrium of the U.S. economy, the behavioral parameters help the model determine how the economy moves from this equilibrium to a new equilibrium in response to changes in policy parameters. Each behavioral parameter is an elasticity that specifies the percentage change that occurs in an economic variable in response to a one percent change in another economic variable. For example, an income elasticity of demand for a good is the percentage change in demand for that good that occurs in response to a one percent change in household income. The following types of behavioral parameters are used by the model:

1. Elasticities of substitution between imported and domestic goods;

2.. Elasticities of transformation between domestic and export goods;

3. Elasticities of import supply;

4. Elasticities of export demand;

5. Elasticities of substitution between labor and capital;

6. Elasticities of labor supply; and

7. Income elasticities.

These parameters have been estimated by the staff of the USITC using time series data where possible, or in other cases, staff has relied on published studies for estimates. The parameters are included in a behavioral parameter data set, that is continually improved and updated.[2]

The final component of the USITC CGE model is the system of equations that compose the model of the U.S. economy. These equations characterize production technology, labor market supply and demand, trade interactions, and domestic supply and demand of final and intermediate

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[1] This 491 sector classification is based on 6-digit Bureau of Economic Analysis sectors.

[2] For further discussion, see USITC, *An Introduction to the ITC Computable General Equilibrium Model*, USITC publication 2423, Washington, DC, Sept. 1991.

goods as functions of prices and quantities. Functional forms that incorporate the behavioral parameters are used. As a final step, equations specifying the accounting identities that tie these interactions together are included to ensure model closure. A more detailed description of this important part of the CGE model is given in the next section.

Current Specification of the USITC CGE Model

The specification of the model is the system of equations that describe the economy. The USITC CGE model specification is divided into eight components: final demand behavior, production technology, factor supplies and demands, treatment of traded goods, domestic prices, domestic market equilibrium, the foreign sector, and income and government revenue. The following section describes the specification of these eight components necessary to model a simple one-sector version of the USITC CGE model.[3] The model views each sector as consisting of three goods: imported goods, goods for export, and goods for domestic consumption. Imports and exports in each sector are imperfect substitutes for their domestic counterparts. Imports combine with the imperfect domestic substitute to form a composite good for the domestic market. Domestic output is also supplied to the export market.

Final Demand Behavior

The USITC CGE model considers three separate components of domestic final demand: household consumption, government demand, and investment demand. The consumption behavior of households is given in equation 1:

$$c = LES(p_q, (1-s^*)Y; \eta) \tag{1}$$

where c denotes real personal consumption, p_q denotes the domestic price of the composite good, s^* is the fixed savings rate, Y is domestic income, and η is the income elasticity of demand. The functional form is that of the linear expenditure system (LES).[4] The LES is a generalization of the Cobb-Douglas utility function in which the origin is translated to a point in the positive quadrant. While the income expansion paths are linear, the displaced origin allows preferences to be nonhomothetic. That is to say, income elasticities of demand can differ from unity. This is an important feature of the model.

In the specification of government demand, real government spending is fixed exogenously:

$$g = g^* \tag{2b}$$

where g^* is the exogenously specified, real government spending.

For investment demand, we assume that real investment is held constant as in:

$$i = i^* \tag{3}$$

where i is real investment and i^* is its exogenously-specified level. Holding investment constant in the specification avoids questions concerning the substitution between present and future consumption which would make static welfare comparisons difficult.

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[3] Recall that the USITC CGE is composed of 491 sectors, although experiments are always run on aggregations of these sectors, e.g. the nine reference sectors used in the current study.

[4] For an introduction to the LES, see ch. 5 of P. R. G. Layard and A. A. Walters, *Microeconomic Theory* (New York: McGraw-Hill, 1978), ch. 3 of A. Deaton and J. Muellbauer, *Economics and Consumer Behavior* (Cambridge, England: Cambridge University Press, 1980), app. A.5 of K. Dervis, J. de Melo, and S. Robinson, *General Equilibrium Models for Development Policy* (Cambridge, England: Cambridge University Press, 1982), and ch. 11 of E. Silberberg, *The Structure of Economics* (New York: McGraw-Hill, 1990).

Production Technology

Production technology is modeled using a constant elasticity of substitution (CES) value added function specified as:[5]

$$x = CES(l_d, k_d; \phi) \tag{4}$$

where x denotes gross domestic output, l_d is labor demand, k_d is capital demand, and ϕ is the elasticity of substitution between labor and capital. The parameter ϕ is exogenous and is estimated outside of the model. A Leontief (fixed coefficients) function is assumed between value added and intermediate products as well as between various intermediates. Intermediate use is given by:

$$v = a x \tag{5}$$

where v is total intermediate use and a is the fixed proportion intermediate-use coefficient. The coefficient a is determined by calibration to the social accounting matrix.

Factor Supplies and Demands

As generally is the case in CGE models, the factors of production, labor and capital, are often assumed to be in fixed supply. This assumption is specified in the following two equations:

$$l_s = l^* \tag{6a}$$

$$k_s = k^* \tag{7}$$

where l_s is the labor supply set equal to the exogenous level l^* and k_s is capital supply set equal to the exogenous level k^*.

Factor demands are derived from the CES production function and specify labor-capital shares which depend on relative factor prices and the elasticity of substitution as in:

$$\frac{l_d}{k_d} = CES(r, w; \phi) \tag{8}$$

where r is the rental rate on capital and w is the wage.

Treatment of Traded Goods

The treatment of traded goods is the most important component of the model specification. As mentioned in the introduction to this section, the model views each sector as consisting of three goods, where imports and exports in each industry category are imperfect substitutes for their domestic counterparts.[6] On the import side, the model treats foreign and domestic commodities as imperfect substitutes in domestic use. Therefore, the import composition of domestic demand is influenced by the ratio of domestic and import prices, as well as by any administrative quantity restrictions. The model aggregates imports and their domestic counterparts into an aggregate good q using a CES aggregation:

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[5] For an introduction to CES production functions, see ch. 9 of P. R. G. Layard and A. A. Walters, *Microeconomic Theory* (New York: McGraw-Hill, 1978), and ch. 9 of E. Silberberg, *The Structure of Economics* (New York: McGraw-Hill, 1990).

[6] The treatment of traded goods follows J. de Melo and S. Robinson, "Product Differentiation and the Treatment of Foreign Trade in Computable General Equilibrium Models of Small Economies," *Journal of International Economics*, vol. 27 (Aug. 1989), 489-97.

$$q = CES(d_d, m; \sigma) \tag{9}$$

$$\frac{d_d}{m} = CES(p_d, p_m; \sigma) \tag{10}$$

Equation 9 is the aggregation relation in which q denotes the composite good for domestic consumption, d_d denotes domestic demand for domestic goods, m denotes imports, and σ is the elasticity of substitution between imports and domestic goods within the sector.[7] Equation 10 is the tangency condition in which p_d is the price of domestic goods and p_m is the domestic price of imports.

The use of the CES functional form for aggregation implies that preferences with respect to imports and domestic goods within a sector are homothetic, while preferences between sectors are not. For a given level of demand for a product category, determined by the specification of the three components of final demand, the shares of imports and domestic goods are determined in response to relative prices.

On the export side, the model assumes that domestic firms allocate their output between domestic and foreign markets according to a transformation function which depends on the ratio of domestic and foreign prices. Therefore, the export composition of domestic supply is influenced by the ratio of domestic and export prices. The functional form used is a constant elasticity of transformation (CET) as indicated in the following equations:[8]

$$x = CET(d_s, e; \tau) \tag{11}$$

$$\frac{d_s}{e} = CET(p_d, p_e; \tau) \tag{12}$$

Equation 11 is the allocation relation in which d_s is domestic supply, e is exports, and τ is the elasticity of transformation between domestic supply and exports. Equation 12 is the tangency condition in which p_e is the domestic price of exports. The shares of domestic supply and exports are determined in response to relative prices.

Domestic Prices

We next turn to the equations for domestic prices, including those of import and export goods. These are given in the following five equations:

$$p_x x = p_d d_s + p_e e \tag{13}$$

$$p_q q = p_d d_s + p_m m \tag{14}$$

$$p_m = (1 + t_m)(1 + \rho_m)\, n\, \pi_m \tag{15}$$

$$p_e = n\, \pi_e \tag{16}$$

where t_m is the tariff rate, ρ_m is the quota premium rate, π_m is the world price of the import good, π_e is the world price of the export good, and n is the exchange rate (U.S. dollars per unit of foreign currency).

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[7] This σ is often referred to as the "Armington" elasticity, see P. S. Armington, "A Theory of Demand for Products Distinguished by Place of Production," *IMF Staff Papers*, vol. 16 (Mar. 1969), 159-76.

[8] The original reference to this functional form is A. A. Powell and F. Gruen, "The Constant Elasticity of Transformation Production Frontier and Linear Supply System," *International Economic Review*, vol. 9 (Oct. 1968), 315-28.

Domestic Market Equilibrium

Three equations are required for domestic market equilibrium, one for the commodity market and two others for the factor markets:

$$q = v + c + i + g \tag{17}$$

$$l_s = l_d \tag{18}$$

$$k_s = k_d \tag{19}$$

The Foreign Sector

We next need to characterize the foreign sector. We do so with the following three equations:

$$B^* = \pi_m m - \pi_e e \tag{20}$$

$$m = s_m(\pi_m; \sigma_f) \tag{21}$$

$$e = d_e(\pi_e; \tau_f) \tag{22}$$

where B^* is the exogenously-specified balance of payments or foreign saving, σ_f is the elasticity of import supply, and τ_f is the elasticity of export demand.

Income And Government Revenue

The national income identity is given as follows:

$$Y = wl_d + rk_d + nt_m \pi_m m + nB^* \tag{23}$$

The income of the representative consumer includes wages, rental income, government revenue, plus foreign savings.

In the actual model, private households, enterprises, and government are disaggregated into separate income and expenditure specifications, and a wider variety of fiscal instruments (e.g. income taxes and indirect business taxes) is included.

Import Restraint Analysis with the USITC CGE Model

In the application of the CGE methodology to import restraint removal, the following question is asked: What would happen to the economy if the import restraints were removed and all other U.S. policies (fiscal and monetary) as well as foreign conditions (economic behavior in foreign countries) remained the same? Specifically, the analysis considers what *would have happened* to the U.S. economy in the base year (1993), if the import restraints were removed. The analysis thus emphasizes the effects of import restraints in isolation from other factors that effect the economy. Since the analysis does not incorporate expected future changes in these other factors, it is not a forecast. That is, the analysis does not tell what actually will happen if import restraints are removed. However, it does provide an assessment of the specific contributions of a policy change such as the removal of tariffs and quotas.

More technically, the model is first calibrated to the base-year data with the import restraints in place.[9] Correct calibration ensures that when the model solves for the equilibrium prices that equate supply and demand in all markets and satisfy the accounting identities governing economic behavior, it reproduces the observed base-year economy. The calibration process ensures that subsequent policy simulations start from an initial position that accurately describes the economy and its accounting identities.

With the calibration process complete, simulation of import restraint removal is accomplished by setting the specific tariff and/or the tariff-equivalent of the quotas to zero in the model, and solving the model for new equilibrium prices and quantities. By comparing these new equilibrium prices and quantities to the base-year solution, the model reports estimates of the economic effects of removing the specified import restraints.

Often the effects on the significant upstream and downstream sectors that are linked with the liberalized sector are of interest as well.[10] Because of the multisectoral nature of the CGE, which explicitly details inter-industry linkages, analysis of the effects of import restraint removal on upstream and downstream sectors is straightforward. Using the matrix representing these linkages, the protected sector's expenditures on goods and services from the other 490 sectors can be determined from the SAM. Large expenditures identify significant upstream sectors. Likewise, the vector of the protected sector's receipts from the other sectors can also be extracted from the SAM. The sectors that generate the largest receipts for the protected sector are significant downstream sectors.

Once the protected sector and its significant upstream and downstream sectors are identified for the policy simulation, the 491-sector SAM and behavioral parameter data set are adjusted into a more manageable size. This is done by using a flexible aggregation facility to combine the remaining sectors in the economy into nine broad reference sectors:

1. Agriculture, forestry, and fishing;
2. Mining and mineral resources;
3. Construction;
4. Nondurable manufacturing;
5. Durable manufacturing;
6. Transportation, communication, and utilities;
7. Wholesale and retail trade;
8. Finance, insurance, and real estate; and
9. Personal, business and public services.

This procedure of aggregating the USITC SAM and behavioral parameter data set into the protected sector, the significant upstream and downstream sectors, and the nine reference sectors results in a manageable, sector-specific model from which to run policy simulation experiments.

The main outputs of the USITC CGE model are the equilibrium prices and quantities that it computes in solving its system of equations. When a policy simulation is run, such as the removal of a specific import restraint, the model reports changes (both in absolute and in percentage terms) in the equilibrium prices and quantities over those calculated in the base period.

Changes in macroeconomic variables specified in the model are reported as well. Some of the more important macroeconomic variables used in the model include the wage to capital rental ratio in the economy and the exchange rate. Changes in these macroeconomic variables from removing import restraints can have feedback effects on the sectors of interest, as well as the rest of the economy.

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[9] Tariffs are taken from official statistics compiled by the U.S. Department of Commerce, and the tariff equivalents of quotas are estimated by USITC staff.

[10] Upstream sectors produce goods and services that serve as inputs into the production of goods and services in the protected sector; downstream sectors use the protected sector's goods and services as inputs.

Another important output result calculated by the model is the equivalent variation economic welfare change from liberalization. The equivalent variation measures the amount of income that would have to be given to the household sector in the absence of liberalization to reach the level of overall economic welfare achievable under liberalization. For example, a positive equivalent variation measure is the estimated total dollar amount U.S. households gain from removal of the tariff protection in a particular sector. This measure is the model's main indicator of net economic welfare change.[11]

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[11] Even though the equivalent variation measure only evaluates domestic welfare in terms of aggregate private real consumption, it is appropriate for this model since government spending and investment are assumed fixed and thus these generate no welfare changes.

APPENDIX D

Concordance for Textiles and Apparel

Table D-1 shows the relationship between the USITC sectors, the BEA input-output categories, and the 2, 3, or 4-digit SIC industries for the textile and apparel sectors directly affected by the MFA, and for selected upstream and downstream sectors.

Table D-1
Concordance of USITC textile and apparel sectors, BEA input-output categories, and SIC industries

USITC Sector	BEA classification	SIC classification
Sectors directly affected by MFA quotas[1]:		
Broadwoven fabric mills	160100	2211, 2221, 2231, 2261, 2262
Narrow fabric mills	160200	2241
Yarn mills and textile finishing	160300	2269, 2281, 2282
Thread mills	160400	2284
Floor coverings	170100	2273
Felt and textile goods, n.e.c.	170200, 170400, 170500, 171002	2299
Lace and knit fabric goods	170300, 180300	2257, 2258
Coated fabrics, not rubberized	170600	2295
Tire cord and fabric	170700	2296
Cordage and twine	170900	2298
Nonwoven fabric	171001	2297
Women's hosiery, except socks	180101	2251
Hosiery n.e.c.	180102	2252
Apparel made from purchased materials	180400	2311, 2321, 2322, 2323, 2325, 2326, 2329, 2331, 2335, 2337, 2339, 2341, 2342, 2353, 2361, 2369, 2371, 2381, 2384, 2385, 2386, 2387, 2389
Curtains and draperies	190100	2391
House furnishings, n.e.c.	190200	2392
Textile bags	190301	2393
Canvas and related products	190302	2394
Pleating, stitching, trimmings, and Schiffli embroidery	190303, 190304, 190305	2395, 2396, 2397
Fabricated textile products, n.e.c.	190306	2399
Luggage	340302	3161
Women's handbags and purses	340303	3171
Upstream and downstream sectors:		
Cotton	020100	0131
Cellulosic man-made fibers	280300	2823
Noncellulosic organic fibers	280400	2824
Composite downstream sector:		
New residential, industrial, and commercial structures	110000 (pt.)	15-17
Maintenance and repair	110000 (pt.)	15-17
Upholstered furniture	220200	2512
Mattresses	220400	2515
Drapery hardware, blinds, and shades	230600	2591
Paper mills	240800 (pt.)	262
Sanitary paper products	240500	2676
Tires and inner tubes	320100	301
Miscellaneous plastic products	320400	308
Rubber and plastic hose and belting	320500	3052
Motor vehicles	590301	3711
Surgical supplies	620500	3842
Needles, pins, and fasteners	640700	3965
Banking and depository institutions	700100	60
Hotels	720100	70
Laundry cleaning	720201	721,725
Portrait services	720203	722,729
Hospitals	770200	806

[1] Production, employment, trade, labor, and capital stocks associated with knit outerwear and underwear mills and knitting mills n.e.c. (BEA numbers 180201, 180202, and 180203, respectively) were allocated to selected sectors listed above in accordance with the 1987 BLS input-output matrix.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, U.S. Department of Labor, Bureau of Labor Statistics.

APPENDIX E

Partial Equilibrium Methodology Used in the Analysis of the U.S. Peanut Import Quota

A partial equilibrium model of the economic effects of the peanut import quota is used because peanuts do not constitute a sector in the social accounting matrix of the USITC's computable general equilibrium model.

Partial Equilibrium Model

A simplified model of the U.S. edible peanut market is illustrated in figure E-1. Area A illustrates the transfer from producers to consumers if edible peanuts are sold in the United States at the world price. Area A is the difference between the U.S. average farm price, P_S (30.4 cents per pound), and the world price, P_W (26.0 cents per pound), multiplied by the quantity of peanuts sold for food use in the U.S. market, Q_1 (2,088 million pounds, farmers' stock basis).

Area B illustrates the value in excess of the world price of the additional peanuts that would be consumed at the world price compared to what would be consumed at the support price. When the import quota and support price are in force; this area represents what economists call a "deadweight" cost or social welfare loss, in that it represents a loss to consumers not matched by a gain to producers. To get the area of this "welfare triangle", an estimate of U.S. peanut consumption at the world price was made using a price elasticity of demand of -0.14.[1]

This estimate of 46 million pounds higher than actual consumption in crop year 1993/94 was multiplied by the difference between the support and world prices, P_S-P_W, (4.4 cents/lb.), and divided by two, to yield an approximation of the social welfare loss of $1 million.

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[1] The elasticity estimate of -0.14 is from Randal R. Rucker and Walter N. Thurman, "The Economic Effects of Supply Controls: The Simple Analytics of the U.S. Peanut Program," *Journal of Law and Economics* vol. 33 No. 2 (Oct. 1990), pp. 483-515. James Schaub has used an estimate of -0.20 in "Peanut Demand Estimates and Consumers' Cost of the Peanut Program," paper presented at the annual meeting of the American Peanut Research and Education Society, Orlando, FL, (July 1987). If the latter is used, additional consumption would be 66 million pounds and the deadweight loss recovered would be $1.5 million. The choice of demand elasticity does not affect the estimate of the transfer from producers to consumers.

The following formula for the price elasticity of demand is used in computing the estimate of U.S. consumption at P_W (Q_2):

$$\frac{(Q_2 - Q_1) / ([Q_1 + Q_2] / 2)}{(P_s - P_w) / ([P_w + P_s] / 2)} = \varepsilon$$

where ε is the price elasticity of demand in the United States, and the Ps and Ps are as defined in figure F-1. This equation is solved for Q_2 with Q_1 = 2,088 million lbs, P_W = 26.0 cents/lb, P_S = 30.4 cents/lb, and ε = -0.14.

Figure E-1
U.S. domestic peanut market: Effects of the U.S. peanut program on the market; and economic welfare effects of the program[1]
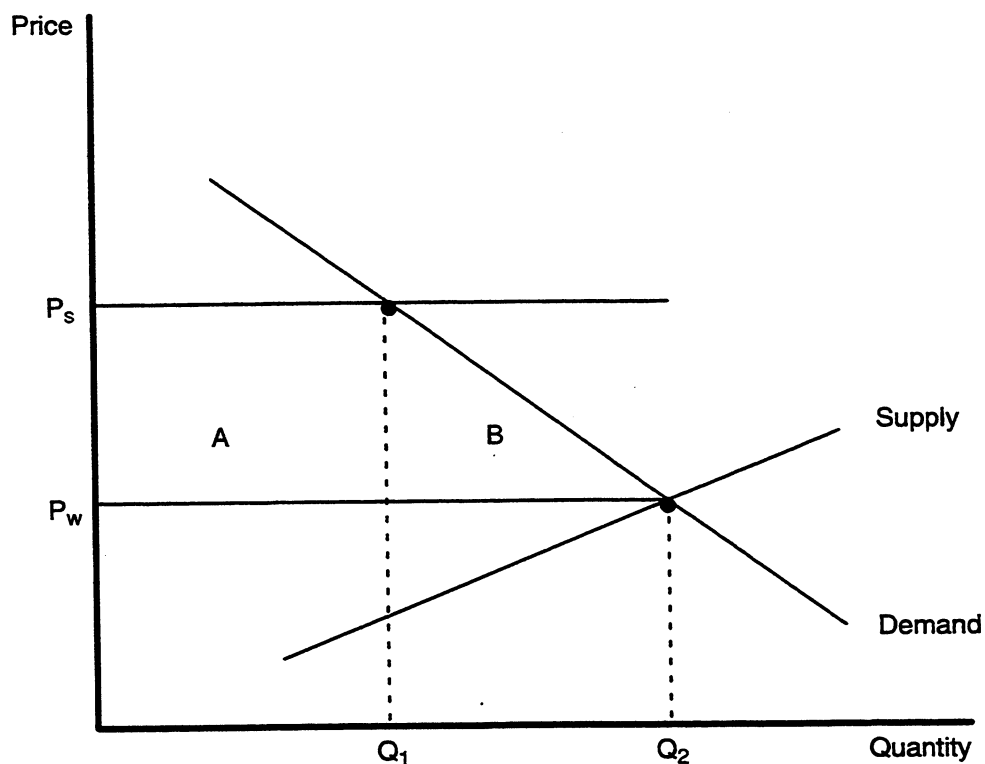
P_s	=	Support price for edible peanuts
P_w	=	World price of U.S. peanuts
Q_2	=	Quantity of peanuts that would be consumed domestically at the world price P_w
Q_1	=	Quantity of peanuts demanded at the edible support price P_s
Q_2-Q_1	=	Quantity of peanuts exported at the world price
A	=	Income transfer from consumers to producers
B	=	Deadweight social welfare loss

[1] The quota on imports of peanuts allows the peanut program to operate without large costs to the U.S. Treasury. Its function is as much to exclude the reentry of exported U.S. peanuts as it is to exclude imports. Imports are limited to about .05 percent of U.S. production, a quantity that is effectively zero for analytical purposes.

APPENDIX F

Alternative Measures of Trade Restrictiveness

As discussed in chapter 2, measures other than estimates of the tariff equivalents of NTBs and the TRI have been used to assess changes in the scope and effect of various import restraint policies. This appendix briefly discusses some of these approaches.

Descriptive Statistical Measures

Descriptive measures such as frequencies have been used to make longitudinal and cross-country comparisons of various countries' commercial policies and practices. These types of statistical measures form the basis for non-tariff barrier inventory studies.[1,2] However, the utility of these measures is limited because they provide little information regarding the actual restrictiveness of the trade barriers in question.

Alternative Measures of Restrictiveness

In addition to estimating the tariff equivalents of specific barriers, researchers have also developed measures that capture the effects of multiple policies that protect (or enhance the domestic price(s) of) a single good or sector or the effects of quantitative restraints as they are simultaneously applied to upstream and downstream industries.

Producer Subsidy Equivalent (PSE)

The PSE seeks to convert the effects of a number of government policies which enhance the price received by producers of a given good to a single measure. These represent the rate of ad valorem producer subsidy which alone would reproduce the price-enhancing effect of the entire package of measures. Tariffs, quotas, direct government payments for both outputs and inputs, and various types of indirect support can be aggregated into a PSE, which, when measured at domestic prices, is calculated as:

$$PSE = (P_2 - P_0)/P_0 + (D + I - L)/(P_2 * Q_2 + D - L).$$

D is the total value of direct government payments to producers, I is the total value of indirect government support to producers, and L is the total value of levies on producers. Q_2 corresponds to output at the distorted price P_2 and P_0 represents the initial equilibrium price.

Consumer Subsidy Equivalent (CSE)

The purpose of the CSE is to measure the value of product specific transfers to consumers from governments and producers. The CSE is an approximate mirror image of the PSE, and each captures a measure of the wedge between the prices consumers pay and those producers receive. When the consumer price is higher than the producer price, the effect can be compared to either a producer subsidy or a consumer tax. When the consumer price is lower, the effect can be compared to either a consumer subsidy or a producer tax. An ad valorem CSE is calculated as:

$$CSE = -(P_2 - P_0)/P_0 + G/(P_2 * Q_2),$$

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[1] See, for example, Sam Laird and Alexander Yeats, *Quantitative Methods for Trade-Barrier Analysis*, (New York: New York University Press, 1990), pp. 88-107.

[2] Erzan, Goto, and Holmes developed a similar type of measure to assess the impact of the Multifiber Arrangement (MFA) by relating the share of textile and apparel imports subject to MFA quotas and the average quota utilization rates for various country suppliers in the European Community (EC) and U.S. markets. Refik Erzan, Junichi Goto, and Paula Holmes, "Effects of the Multi-Fibre Arrangement on Developing countries' Trade: An Empirical Investigation," in Carl B. Hamilton ed., *Textiles Trade and the Developing Countries: Eliminating the Multi-Fibre Arrangement in the 1990s* (Washington, DC: The World Bank, 1990), pp. 73-4.

where G is the total value of government subsidies to consumers. Q_2 corresponds to output at the distorted price P_2 and P_0 represents the initial equilibrium price.

The Relationship between the TE, PSE, and CSE

From the above discussion, it is apparent that the PSE equals the TE plus an additional term to capture other policies affecting producers. The CSE equals the TE multiplied by -1, plus an additional term to capture other policies affecting consumers. Therefore, well-documented calculations of PSEs and CSEs can be used to support the calculation of TEs. Two recent examples of such calculations are OECD(1994) and USDA(1994), both of which focus on PSEs and CSEs for agriculture.[3]

Effective Rate of Protection (ERP)

A frequent concern to trade policymakers is the situation in which import restraints are imposed on a number of products simultaneously. It is often casually assumed that such a scheme of restraints "protects" all domestic products simultaneously. If successful "protection" implies that the value-added (wages plus profits) earned by domestic producers goes up, this assumption is false. If producers experience small price rises for their output because competing imports are restrained, but larger price rises for purchased inputs because imports of those imports are restrained, value-added can fall.

The ERP is an attempt to capture the effect on a given domestic industry of import restraints in all industries simultaneously. It is defined as:

$$ERP = (V_2 - V_1)/V_1,$$

where V_2 is value-added per unit of output under the current set of import restraints, and V_1 is value-added per unit of output under no import restraints.[4]

For a specific industry j, let t_j represent the tariff applied to the output of industry j, t_i represent the tariff applied to the outputs of other industries indexed by i, and let a_{ij} be the value of purchased input from industry i used to produce one dollar's worth of output from industry j.[5]

Then the ERP for industry j is calculated as:

$$ERP_j = (t_j - \Sigma\ a_{ij}t_i) / (1 - \Sigma\ a_{ij}).$$

Tariff equivalents of quotas or NTBs may be used in place of tariffs for calculating the ERP. When tariffs on inputs for a given industry are sufficiently high relative to tariffs on outputs, the ERP can be negative.[6]

The ERP was designed as a convenient measure to capture the direct and indirect effects of tariffs, requiring only limited computation. The USITC CGE model imposes tariffs and tariff equivalents on a full production structure of the economy which captures the input-output

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[3] Organization for Economic Co-operation and Development, Directorate for Agriculture, *Tables of Producer Subsidy Equivalent and Consumer Subsidy Equivalents, 1979-1993,* on diskettes, (Paris: OECD), 1994; United States Department of Agriculture, *Estimates of Producer And Consumer Subsidy Equivalents: Government Intervention in Agriculture, 1982-92,* Statistical Bulletin No. 913, (Washington DC: USDA), 1994. Both of these sources cover the policies of a number of countries in addition to the United States. The OECD definitions of PSE and CSE correspond to those given above, whereas the USDA definition of PSE omits the effect of producer levies. There are other differences in coverage and data between the two sources.

[4] Value-added per unit of output is calculated as product price minus input costs per unit of output.

[5] That is, a_{ij} is an input-output coefficient and can be obtained from an input-output table.

[6] For certain types of policies the PSE can also be negative; see USDA (1994, pp. 4,5) for examples. In general, when there are import restraints in place the CSE is always negative unless there is a sufficiently large offsetting subsidy to consumers.

relationships among industries that purchase inputs from other industries. Thus, the estimates of output, employment, trade flows, and welfare presented in this study capture the types of considerations which the ERP was originally meant to address.[7]

Econometric Estimates of Trade Restrictiveness

An established body of econometric work has shown that good estimates of trade flows between countries can be obtained from a regression equation in which exports from country i to country j are modeled as functions of economic size, economic distance, and other determinants of trade. Economic size measures include total GDP, resource endowments such as population and land area; economic distance measures include physical distance, linguistic or cultural similarity, border import restraints, and institutional details such as free trade areas and customs areas. Models of this type are known as gravity models.[8]

These models offer the potential of capturing the effects of "invisible" border measures such as health and safety regulations, technical standards, and marking and packaging requirements.[9] Once a well-fitting equation is obtained, the residuals can be used as a measure of "openness" to trade. Trade flows which are larger than predicted imply that the importing country is more "open" than average and trade flows which are smaller than predicted imply that the importing country is relatively "closed".[10]

The primary difficulties with this approach are that estimated residuals from a regression capture noise and misspecification error as well as the degree of openness. Moreover, it is difficult to capture cross-country differences in tastes, the range of locally-available substitutes, and other "invisible" determinants of trade in this type of econometric model.

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[7] For discussions and examples of the relationship between the treatment of interindustry linkages in CGE models and partial equilibrium measures such as effective rates of protection, see Bela Balassa, "Incentive Measures: Concepts and Estimation", in Bela Balassa et al., eds., *Development Strategies in Semi-Industrial Countries* (1982), Baltimore: Johns Hopkins University Press; Jaime de Melo, "Tariffs and Resource Allocation in Partial and General Equilibrium", *Weltwirtschaftliches Archiv*, vol. 116 (1980), pp. 114-130; Jaime de Melo and Sherman Robinson, "Trade Policy and Resource Allocation in the Presence of Product Differentiation", *Review of Economics and Statistics* vol. 63 no. 2 (1981), pp. 169-177; and Shantayanan Devarajan, "Models of Growth and Adjustment in Developing Countries" (1987), processed: John F. Kennedy School of Government, Harvard University.

[8] A survey of early applications of gravity equations is found in Alan Deardorff, "Testing Trade Theories and Predicting Trade Flows", in Ronald W. Jones and Peter B. Kenen, *Handbook of International Economics*, Volume I (1984), Amsterdam: North Holland, pp. 467-518. Microeconomic foundations for the gravity equation include James E. Anderson, "A Theoretical Foundation for the Gravity Equation", *American Economic Review*, Vol. 69 No. 1 (1979), pp. 106-116; Elhanan Helpman and Paul Krugman, *Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition and the International Economy* (1985), Cambridge, Mass.: MIT Press, p. 167; and J.H. Bergstrand, "The Generalized Gravity Equation, Monopolistic Competition, and the Factor-Proportions Theory of International Trade", *Review of Economics and Statistics*, Vol. 71 No. 1 (1989), pp. 143-153. For the use of econometric models to measure openness in a Heckscher-Ohlin context, see Edward Leamer, "Cross-Section Estimation of the Effects of Trade Barriers", in Robert C. Feenstra, ed., *Empirical Methods for International Trade* (1988), Cambridge, Mass: MIT Press, pp. 51-82.

[9] In principle, this type of model can be fit for a specific product. If one were sufficiently confident that the regression equation captured the relevant market determinants of trade as well as the visible trade policy measures, the residuals from such an equation might then be used to capture the effects of "invisible" measures. For an example, see James Harrigan, "OECD Imports and Trade Barriers in 1983", *Journal Of International Economics* Vol. 35 (1993), pp. 91-111.

[10] For reviews of recent results with respect to Japan, see Robert Z. Lawrence, "Japan's Different Trade Regime: An Analysis with Particular Reference to *Keiretsu*," *Journal of Economic Perspectives*, Vol. 7 No. 3 (Summer 1993), pp. 3-20; Gary R. Saxonhouse, "What Does Japanese Trade Structure Tell Us About Japanese Trade Policy?", *Journal of Economic Perspectives*, Vol. 7 No. 3 (Summer 1993), pp. 21-44.