

RESEARCH SEMINAR IN INTERNATIONAL ECONOMICS

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SEMINAR DISCUSSION PAPER NO. 202

THE IMPACT OF TARIFFS ON PROFITS IN THE UNITED STATES AND OTHER MAJOR TRADING COUNTRIES*

by

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*The research underlying this paper was financed by a grant from the Ford Foundation to support a Program of Research on Trade Policy at The University of Michigan. We would like to thank John Alfaro for computational assistance.

Abstract

In this paper, we use the Michigan Model of World Production and Trade to analyze the impact of protection on total and per unit profits in the U.S. and other major trading countries. It is found that protection reduces profits in the export sectors more than it stimulates profits in the import-competing sectors. However, total profits of export and import-competing firms combined are generally unaffected by existing tariffs. Furthermore, most of the profit transfers between exporters and import-competing firms take place within the same industry rather than across industries. Therefore, general tariff measures are not likely to enhance profits of U.S. industries. Only tariffs aimed at specific product groups may have this effect.

June 4, 1987

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I. INTRODUCTION

Even though the dollar has depreciated significantly since the winter of 1985, the United States has continued to run a substantial trade deficit. The trade imbalance has fueled protectionist sentiment especially in the U.S. Congress, and numerous proposals have been made to impose trade restrictions as a means of inducing surplus countries to institute market opening measures that might benefit American suppliers. Such restrictions may also be favored in the belief that protection can help generally to restore the profitability of U.S. industries that have been battered by the effects of the appreciation of the dollar prior to 1985.

The belief that protection will increase profits is surprising to many economists who have long argued that protection does not help all producers in an economy. That is, protection may shelter import-competing firms from foreign competition but only at the expense of export firms. While this simple theoretical point seems obvious, it is remarkable that it is so often overlooked or else deemed irrelevant. In a recent essay, Clements and Sjaastad (1984) have forcefully reacted against ignoring the impact of protection on exporters. Using the argument that every tariff is ultimately an export tax, they compute the tax incidence of protection in Australia and six developing nations and conclude that, in most cases, tariffs tax exporters much more than they subsidize import-competing firms. They conclude (p. 49) that, "given this information, it can no longer be credibly argued that protection serves the national interest."

In this paper, we address the same question as Clements and Sjaastad in the context of the Michigan Model of World Production and Trade. Not only does the Michigan Model include a wider set of countries, but it also allows a theoretically more complete analysis of this issue. In Section II which follows, we consider some conceptual points concerning the impact of tariffs on profits. We then briefly discuss the Michigan model, our methods of analysis, and the numerical experiments. Subsequently, we present the results of our experiments for the United States and compare them with the other

countries of the model.

II. MEASURING THE IMPACT OF TARIFFS ON PROFITS

In this paper, profits are defined as the share of revenue that is not paid out to labor or intermediate inputs but accrues to capital instead. The impact of tariff protection on profits depends on the response of a firm's revenue and costs to a change in tariffs. A tariff makes imports more expensive and therefore causes a shift in demand away from imports towards relatively cheaper domestic substitutes. Increasing demand leads to higher prices for domestic products, so that production of goods for domestic consumption, which we will call home goods, becomes more profitable. Producers of home goods and, in particular, import-competing firms earn more profits. At the same time, however, all industries face higher production costs. Imported and domestically produced intermediate products have become more expensive and, if wages are linked to the domestic price level, labor costs go up as well. As a result, part of the profit gain of home-goods producers is neutralized by rising costs.

While import-competing sectors benefit from protection, exporters are unambiguously worse off. Under competitive conditions, export prices are determined in international markets by the equality between world demand and supply. As tariffs reduce import demand, they put downward pressure on world prices. Moreover, like all firms, exporters in the country with the tariff protection pay more for their inputs. They therefore face lower output prices as well as higher costs, and this reduces both their level of output and profits. Furthermore, exporters in other countries are hurt by the declining world demand and lower world prices. The thrust of Clements and Sjaastad's argument is that protection hurts export profits substantially more than it helps import-competing firms. In support of this contention, they compute a measure of profitability per unit of output in export and import-competing firms. In their view, a tariff alters the difference between the product price and the unit costs of a firm, and, in this respect, works exactly like a subsidy or production tax. In fact, a tariff is a combination of an export tax and

TABLE 1

subsidy for import-competing domestic industries. Consequently, the impact of a tariff is best measured by the magnitude of the subsidy it provides and the export tax it imposes, or, what amounts to the same thing, by the change in the profitability per unit of output in export and import-competing firms.

In their empirical work, Clements and Sjaastad define the change in profitability of export industries as the difference between the percentage change in the export price and an appropriately constructed price index of nontraded goods. In the same way, the response of profits to tariff protection in import-competing industries is the difference between the price changes of home goods and nontraded goods. Clements and Sjaastad consider price changes in nontraded goods as a good proxy for unit cost adjustments. They argue that nontraded goods consist mainly of services, which are supposedly more labor intensive than other products. The prices of nontraded goods are therefore primarily determined by wage costs. Given the importance of labor in production costs and the assumed similarity between wages and the prices of nontraded goods, the change in price of nontraded goods is thus supposedly a good approximation for cost changes in the economy.

In our view, Clements and Sjaastad's approach can be faulted on at least three counts. First, in concentrating on wages and labor costs, they ignore the role of intermediate inputs in total costs. But more importantly, it is not necessarily the case that nontraded goods are more labor intensive than tradables. Table 1 presents data on labor compensation as a fraction of value added for selected countries in 1976. With the exception of community, social and personal services (ISIC 9), labor costs in nontraded industries do not systematically account for a larger share of value added than in tradable industries. Hence, we see no valid reason for using a price index of nontraded goods as a measure of unit costs. A final point is that, in assessing the effects of tariff protection, it may be misleading to focus on profit per unit of output rather than total profits. The change in profit per unit of output equals the change in the price minus the change in

average cost. If protection induces large average cost but small price adjustments, profitability per unit of output may fall in import-competing industries even though total profits may have risen considerably. For the same reason, export profits per unit of output may go up while total export profits fall. In order to overcome these objections, we shall use the Michigan Model to analyze the effects of protection on both total and unit profits for the major industrialized and developing countries.

III. PROTECTION AND PROFITS IN THE MICHIGAN MODEL

As indicated in Deardorff and Stern (1986), the Michigan Model is a general equilibrium model of the world economy with 34 countries and 29 industries. There are 22 sectors producing tradable goods, which are both exported and consumed domestically. The products of the other seven sectors are not traded internationally and are only consumed at home. In the tradable industries, the Michigan Model makes an explicit distinction between production for export and production for domestic consumption. Each industry uses labor, intermediate inputs, and fixed amounts of capital to produce profit-maximizing levels of output for each purpose. In this set-up, profits are equal to the return to the fixed factor, capital, or, equivalently, to the share of revenue that is not paid to labor and intermediate inputs. This is the definition of profits used in all the computations to follow. We consider two experiments. First, we compute the consequences of a complete removal of all existing post-Tokyo Round (1987) U.S. tariffs on profits of exporters and producers of home goods. The second experiment is similar, but we assume that all industrialized countries agree to dismantle their post-Tokyo Round tariff barriers as well.¹ Both experiments are thus comparing total and per unit profits

¹We assume in both experiments that existing nontariff barriers (NTBs) are not removed. As noted in Deardorff and Stern (1986, p. 22), the treatment of NTBs in the Michigan Model reduces the responses to tariff liberalization. Since we do not have systematic estimates of the price and quantity effects of NTBs, trade coverage ratios based on the UNCTAD inventory of NTBs are used to represent NTBs, which are assumed to remain in place.

in a situation with and without tariffs and, in this way, provide information about the effects that the current levels of protection may have on profits.

The post-Tokyo Round tariff rates for the industries and industrialized countries covered by the Michigan Model are listed in Deardorff and Stern (1986, p. 51). In most countries, tariffs range from 4 to 7 percent, although in Australia, Austria, and Finland they are substantially higher. In general, the textile, wearing apparel, and footwear industries are among the most heavily protected.

IV. PROTECTION AND PROFITS IN THE UNITED STATES

The first experiment provides an indication of the impact of the current levels of U.S. post-Tokyo Round tariffs on profits. For this experiment, the U.S. tariffs are removed and we calculate the percentage profit changes that would result. We then take these profit changes, with their signs reversed, as an indication of what the effects would be of imposing the existing U.S. tariff structure on the economy without tariff barriers. The results are reported in Table 2. For each U.S. industry the table contains profit figures for export and import-competing firms as well as an aggregate for all firms in the industry combined. The first three columns show percentage changes in profits per unit of output, and the last three refer to percentage changes in total profits. Tariffs increase production costs and, in reducing import demand, lower world prices. Hence export firms experience both higher costs and lower prices so that all profit changes in the fourth column are negative. The changes in export profits per unit of output in column (1) depend on the strength of the price and average cost adjustments and can be positive or negative. The second and fifth columns contain the profit adjustments in firms producing for the domestic market. Tariffs increase demand for import-competing goods, and, unless input costs increase drastically, total profits of firms producing for the domestic market increase. For this reason, all figures in column (5) are positive except for the profit changes in the paper and nonferrous metals industries. The per unit profit changes for import-competing firms in column (2) are positive for all industries except wearing apparel, footwear, and

TABLES 2 AND 3

TABLES 2 AND 3

petroleum products. The profit levels in the nontraded sectors are virtually unaffected by the tariff removal. Columns (3) and (6) of Table 2 show the change in total industry profits for exporters and home-goods producers combined.

Table 3 presents the same information as Table 2 for our second experiment involving the post-Tokyo Round tariffs for all the industrialized countries of the model. In this case, imported inputs and consumption goods are more costly in all industrialized countries, which reinforces the demand shift away from imports. As a result, world trade declines, but this does not necessarily imply that U.S. export firms lose more from multilateral tariffs than from the U.S. tariffs. If foreign suppliers experience greatly reduced exports due to existing tariffs, the changes in world prices can be relatively small, which would limit the profit declines of U.S. exporters.

In both tables, we also computed profit changes for the whole economy as a weighted average of the industry results. The appropriate weights were found by first defining total national profits, Π , as the sum of all industry profits π_i , that is,

$$\Pi = \sum_{i=1}^n \pi_i$$

with n = number of industries in the economy.

Logarithmically differentiating this identity gives:

$$d \ln \Pi = \sum_{i=1}^n \frac{\pi_i}{\Pi} d \ln \pi_i$$

Hence, the shares of a sector's profits in total profits can be used as weighting factors to construct the averages for columns (4) – (6) of each table. As should be evident, the profit shares used are not the same for export, import-competing and all firms combined.

The weighted averages for the per unit profit changes are derived by noting that

TABLE 4

$$d \ln \frac{\Pi}{Y} = d \ln \Pi - d \ln Y$$

with $Y =$ total national output

By definition:

$$Y = \sum_{i=1}^n Y_i$$

with $Y_i =$ output of industry i .

Thus:

$$d \ln Y = \sum_{i=1}^n \frac{Y_i}{Y} d \ln Y_i$$

The definition of profit per unit of output may include all firms in the industry or apply to export or import-competing firms only.

From the aggregate profit figures for the whole economy, we conclude that current U.S. tariffs reduce total export profits by 5.3% and increase profits in the home goods sector by 0.1%. As seen in Table 3, multilateral tariffs yield similar results, although the reductions in total export profits are generally larger. Our results thus suggest that, if tariffs were increased, exporters are harmed more than import competing firms are helped by existing tariffs. While this is consistent with the findings of Clements and Sjaastad, it is important to note that, when the profits of exporters and home-goods producers are combined, the total industry profits are virtually unaffected by existing tariffs. The reason is that exports account for only a small fraction of total production in most U.S. industries, as is indicated in Table 4. Apparently, the burden that U.S. tariffs impose on exporters provides a relatively insignificant subsidy to a relatively large import-competing sector. It thus appears that, while protection does not impose an important burden on total industry profits, it seriously hurts exporters and does not significantly help import-competing firms.

In our experiments, average cost changes are an increasing function of output changes because both average intermediate cost and average labor cost increase when output expands. As a result, unit profits fall less than total profits in export firms with reduced production. This is seen by comparing columns (1) and (4) in Tables 2 and 3. For the same reason, unit profits increase less in import-competing firms where the tariffs cause increases in production (compare columns (3) and (5)). The positive relation between average cost and output changes also explains why the difference between total and unit profits is most marked in industries with substantial changes in total profits. In effect, the large reductions in total export profits in several industries are accompanied by increasing profit margins. This brings into question the use of unit profits as a valid indicator of profit changes. It furthermore suggests that Clements and Sjaastad underestimate the true cost of protection for export firms, although the methodological problems mentioned earlier make their results hard to interpret.

The sectoral results in Tables 2 and 3 indicate that import-competing firms in the wearing apparel, leather, footwear, electrical machinery, transport equipment, and other manufactured products industries benefit most from protection, although the gain in total profits never rises above 2%. At the same time, export profits in several of these industries would rise substantially if tariff barriers were removed. Thus, protection generates a transfer from exporters to other producers within the same industry.² Whether profits of the whole industry decline depends on the export shares in sectoral production and on the unilateral or multilateral character of the tariffs. We find that, with protection, total profits are lower in the transport equipment and leather industries and higher in the wearing apparel, other manufactured products, and footwear industries. Reducing tariffs would raise export profits in sectors such as agriculture and electrical machinery without any significant negative impact on home production. These industries

²The Michigan Model distinguishes export firms from import-competing firms. In reality, the shift from import-competing to export activities may take place within the same firm.

are the real victims of protection.

V. AN INTERNATIONAL COMPARISON OF TARIFF PROTECTION AND PROFITS

In this section, we compare the impact of multilateral tariffs on per unit and total profits in different countries. Table 5 presents the percentage changes in profits of the export and home goods sectors for all countries of the model, as well as the change in profits for both sectors combined. The results reported represent national averages for all industries. As mentioned before, the profit shares of individual industries in national profits were used as weights.

For most countries, a similar picture emerges as in the case of the United States. In percentage terms, tariffs would reduce total export profits more than they increase total profits of import-competing sectors. Reductions in total profits in export production are in the 4–12% range for most countries, while increases in profits in the home sector are most often under 2%. Furthermore, total profits of the home and export sectors combined would generally fall, but the changes would be minimal.

Looking at individual countries, we find that exporters in Australia (–12.5%), Austria (–16.1%), Canada (–10.3%), and Taiwan (–14.9%) are most affected by existing tariffs. The result for Australia and Austria is easy to explain in view of these countries' relatively high levels of protection. The relatively large total export profit changes in Taiwan and in South Korea (–7.9%) are more surprising. Apparently, Taiwanese and South Korean exporters would benefit significantly from the higher world prices resulting from trade liberalization in the industrialized countries. In addition, home-sector profits would rise considerably in these two countries. Tariff liberalization in the industrialized countries would thus make the Taiwanese and South Korean economies significantly more export oriented.

Profit adjustments of some importance also occur in import-competing industries in Belgium-Luxembourg, Ireland, and the Netherlands. These countries are

TABLE 5

characterized by high import-demand elasticities and by a large share of imports in total demand. As a result, even low levels of protection generate a strong expansion of demand for domestic products.

VI. CONCLUSION

In this paper, we used the Michigan Model of World Production and Trade to calculate the impact of the existing structure of tariff protection on industry profits in a wide range of countries. We found no evidence for the belief that protection could strengthen the profitability of U.S. manufacturing industries. Profits of the import-competing sectors are only marginally enhanced by the current levels of tariff protection and profits of export and import-competing firms combined are generally unaffected by existing tariffs. Considering furthermore that trade barriers hurt consumers, the justification for new tariffs on profitability grounds appears rather weak.

Our experiments confirm Clements and Sjaastad's finding that the existing tariff protection taxes exporters much more than it subsidizes the import-competing sector. In several U.S. industries the loss in export profits is quite large. Also, trade barriers significantly reduce export profits in most other countries.

At a more detailed industry level our results indicate that, at least in the United States, most of the profit transfers between exporters and import-competing firms take place within the same industry rather than across industries. This is particularly the case in industries such as textiles, footwear, and wearing apparel, where pressure for protectionist legislation traditionally has been strong. It suggests that broad tariff measures will generally not succeed in raising profits in hard pressed industries. Only tariffs aimed at specific product groups may have this effect.

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TABLE 1 : LABOR COMPENSATION AS A PERCENTAGE SHARE
OF VALUE ADDED IN SELECTED COUNTRIES, 1976

Sector	ISIC group	France	Germany	U.K.	U.S.	Japan	Brazil
<u>1. Tradable industries</u>							
Agriculture, hunting, forestry, fishing	(1)	18.4	13.7	36.2	18.8	14.0	16.9
Food, beverages, and tobacco	(310)	47.4	29.2	22.3	48.3	30.0	22.2
Textiles	(321)	76.0	49.1	59.0	81.3	66.1	34.7
Wearing apparel	(322)	86.0	65.8	75.7	88.4	72.6	34.4
Leather and leather products	(323)	81.3	53.7	54.6	87.2	65.2	37.0
Footwear	(324)	82.7	58.1	64.3	85.9	67.9	35.7
Wood products	(331)	58.2	44.8	66.0	61.7	61.6	36.1
Furniture	(332)	76.8	66.1	82.5	79.2	64.8	47.2
Paper and paper products	(341)	65.8	39.3	59.4	70.4	45.3	34.2
Printing and publishing	(342)	77.6	53.7	73.4	79.4	66.2	40.8
Chemicals	(35A)	51.3	52.4	57.7	56.1	36.2	19.4
Petroleum products	(35B)	40.8	18.2	16.6	42.7	8.8	58.9
Rubber products	(355)	54.1	54.0	74.2	63.2	62.4	22.4
Nonmetallic mineral products	(36A)	65.2	73.5	86.8	66.5	48.0	32.2
Glass and glass products	(362)	68.3	76.4	88.4	69.2	51.1	34.8
Iron and steel basic industries	(371)	72.7	65.0	83.9	77.4	33.6	25.9
Nonferrous metals	(372)	71.0	64.1	82.6	74.1	42.6	29.3
Metal products, except machinery	(381)	73.3	63.5	78.0	74.1	54.6	37.4
Nonelectrical machinery	(382)	67.5	65.7	78.5	76.0	50.3	41.7
Electrical machinery and apparatus	(383)	76.0	75.9	68.4	81.1	46.0	35.2
Transport equipment	(384)	67.6	66.8	80.9	71.3	52.1	34.2
Other manufactured products	(38A)	43.4	46.6	57.8	47.9	30.5	30.8
Average traded goods		54.4	52.7	57.3	62.1	39.4	25.3
<u>2. Nontradable sectors</u>							
Mining and quarrying	(2)	31.1	32.3	50.5	33.2	45.4	33.5
Electricity, gas and water	(4)	27.7	25.6	40.4	27.7	31.2	24.1
Construction	(5)	79.0	55.9	64.4	79.0	55.0	48.7
Wholesale and retail trade	(6)	57.7	45.1	59.5	57.9	49.8	24.2
Transport and communication	(7)	60.5	59.7	64.4	60.5	64.1	44.1
Finance, insurance, real estate	(8)	29.5	31.5	20.3	29.5	21.2	47.6
Community, social and personal services	(9)	89.7	72.1	89.7	89.7	68.0	59.4
Average Nontraded Goods		66.7	59.4	67.1	63.7	52.9	40.5

Source : Data base for the Michigan model.

TABLE 2 : EFFECTS OF POST-TOKYO ROUND U.S. TARIFFS ON PROFITS PER UNIT OF OUTPUT
AND TOTAL PROFITS BY INDUSTRY
(Percentages)

ISIC group	Percentage change in profits per unit of output			Percentage change in total profits		
	Export firms	Import competing firms	All firms	Export firms	Import competing firms	All firms
	(1)	(2)	(3)	(4)	(5)	(6)
<u>1. Tradable industries</u>						
Agriculture, forestry, fishing (1)	-2.4	0.0	-0.3	-2.8	0.0	-0.4
Food, beverages, and tobacco (310)	-0.8	0.0	0.0	-5.3	0.1	-0.1
Textiles (321)	-3.3	0.1	-0.2	-16.6	0.1	-1.1
Wearing apparel (322)	2.0	-0.1	0.0	-46.4	2.0	1.3
Leather and leather products (323)	1.4	0.0	0.4	-19.8	1.0	-5.3
Footwear (324)	5.3	-0.2	-0.1	-25.8	1.0	0.8
Wood products (331)	-2.2	0.1	-0.1	-4.8	0.1	-0.3
Furniture (332)	-1.1	0.1	0.0	-11.0	0.3	0.1
Paper and paper products (341)	0.8	0.1	0.1	-5.7	-0.1	-0.4
Printing and publishing (342)	-2.0	0.0	0.0	-5.7	0.1	0.0
Chemicals (35A)	-1.5	0.1	-0.1	-4.1	0.2	-0.3
Petroleum products (35B)	7.1	-0.2	0.2	-2.2	0.1	0.0
Rubber products (355)	0.2	0.0	0.0	-4.7	0.7	0.4
Nonmetallic mineral products (36A)	-0.9	0.1	0.1	-5.3	0.7	0.5
Glass and glass products (362)	-0.6	0.1	0.0	-5.1	0.3	0.0
Iron and steel basic industries (371)	0.6	0.0	0.1	-8.4	0.1	-0.1
Nonferrous metals (372)	0.0	0.0	0.0	-9.6	-0.3	-0.7
Metal products, except machinery (381)	-2.5	0.2	0.1	-8.7	0.5	0.2
Nonelectrical machinery (382)	-2.9	0.0	-0.5	-6.1	0.0	-1.1
Electrical machinery and apparatus (383)	-6.3	0.5	-0.2	-6.1	0.8	-0.4
Transport equipment (384)	-7.8	0.9	-0.3	-10.5	1.2	-0.4
Other manufactured products (38A)	-1.4	0.5	0.2	-3.6	1.2	0.4
<u>2. Nontradable sectors</u>						
Mining and quarrying (2)		-0.1	-0.1		-0.3	-0.3
Electricity, gas and water (4)		0.0	0.0		0.1	0.1
Construction (5)		0.0	0.0		0.0	0.0
Wholesale and retail trade (6)		0.0	0.0		0.1	0.1
Transport and communication (7)		0.0	0.0		0.0	0.0
Finance, insurance, real estate (8)		0.1	0.1		0.1	0.1
Community, social and personal services (9)		0.0	0.0		0.1	0.1
Weighted average all industries ^(a)	-1.3	0.0	0.0	-5.3	0.1	0.0

(a) See text for construction of the weighted average.

**TABLE 3 : EFFECTS OF POST-TOKYO ROUND TARIFFS OF THE MAJOR INDUSTRIALIZED COUNTRIES
ON PROFITS PER UNIT OF OUTPUT AND TOTAL PROFITS
IN U.S. INDUSTRIES
(Percentages)**

ISIC group	Percentage change in profits per unit of output			Percentage change in total profits			
	Export firms	Import competing firms	All firms	Export firms	Import competing firms	All firms	
	(1)	(2)	(3)	(4)	(5)	(6)	
<u>1. Tradable industries</u>							
Agriculture, forestry, fishing	(1)	-8.8	-0.6	-1.7	-10.4	-0.8	-2.0
Food, beverages, and tobacco	(310)	-1.1	0.1	0.0	-7.2	0.2	0.0
Textiles	(321)	-0.4	0.2	0.1	-2.1	0.7	0.4
Wearing apparel	(322)	2.4	-0.1	0.0	-57.1	2.0	1.1
Leather and leather products	(323)	0.3	-0.1	0.1	-3.5	1.5	-0.1
Footwear	(324)	7.7	-0.1	-0.1	-40.8	0.8	0.5
Wood products	(331)	-1.4	0.2	0.0	-3.1	0.3	0.0
Furniture	(332)	-1.1	0.1	0.1	-11.2	0.3	0.1
Paper and paper products	(341)	0.5	0.1	0.1	-3.4	0.0	-0.2
Printing and publishing	(342)	-0.5	0.1	0.1	-1.5	0.1	0.1
Chemicals	(35A)	-2.1	0.1	-0.1	-5.7	0.2	-0.4
Petroleum products	(35B)	5.9	-0.2	0.1	-1.8	0.1	0.0
Rubber products	(355)	0.2	0.0	0.0	-4.4	0.7	0.4
Nonmetallic mineral products	(36A)	-0.6	0.2	0.1	-3.5	0.8	0.6
Glass and glass products	(362)	-0.4	0.1	0.1	-3.3	0.4	0.2
Iron and steel basic industries	(371)	0.1	0.0	0.0	-0.6	0.2	0.2
Nonferrous metals	(372)	0.1	0.1	0.1	1.3	0.2	0.2
Metal products, except machinery	(381)	-3.7	0.2	0.0	-12.8	0.4	0.0
Nonelectrical machinery	(382)	-1.2	0.1	-0.1	-2.5	0.1	-0.4
Electrical machinery and apparatus	(383)	-8.9	0.4	-0.6	-15.9	0.7	-1.0
Transport equipment	(384)	-10.0	0.7	-0.8	-13.5	0.9	-1.1
Other manufactured products	(38A)	-1.2	0.5	0.2	-3.3	1.3	0.5
<u>2. Nontradable sectors</u>							
Mining and quarrying	(2)		0.0	0.0		0.0	0.0
Electricity, gas and water	(4)		0.1	0.1		0.1	0.1
Construction	(5)		0.1	0.1		0.0	0.0
Wholesale and retail trade	(6)		0.0	0.0		0.1	0.1
Transport and communication	(7)		0.1	0.1		0.1	0.1
Finance, insurance, real estate	(8)		0.1	0.1		0.1	0.1
Community, social and personal services	(9)		0.1	0.1		0.1	0.1
Weighted average all industries ^(a)		-3.9	0.0	0.0	-7.3	0.1	0.0

(a) See text for construction of the weighted average.

TABLE 4 : PERCENTAGE SHARES OF EXPORTS IN TOTAL U.S. PRODUCTION, 1976

Sector	ISIC group	Export shares in total sectoral production
Agriculture, hunting, forestry, fishing	(1)	13.2
Food, beverages, and tobacco	(310)	2.5
Textiles	(321)	8.0
Wearing apparel	(322)	1.8
Leather and leather products	(323)	32.3
Footwear	(324)	10.0
Wood products	(331)	9.5
Furniture	(332)	2.1
Paper and paper products	(341)	5.0
Printing and publishing	(342)	1.4
Chemicals	(35A)	10.5
Petroleum products	(35B)	5.0
Rubber products	(355)	5.5
Nonmetallic mineral products	(36A)	3.9
Glass and glass products	(362)	6.0
Iron and steel basic industries	(371)	2.7
Nonferrous metals	(372)	4.3
Metal products, except machinery	(381)	3.9
Nonelectrical machinery	(382)	19.4
Electrical machinery and apparatus	(383)	10.8
Transport equipment	(384)	14.4
Other manufactured products	(38A)	17.4

Source : Data base for the Michigan model.

**TABLE 5: CHANGES IN PROFITS PER UNIT OF OUTPUT AND TOTAL PROFITS
DUE TO POST-TOKYO ROUND TARIFFS IN ALL INDUSTRIALIZED COUNTRIES OF THE MICHIGAN MODEL
(Percentages)**

	Percentage change in profits per unit of output			Percentage change in total profits		
	Export firms	Import competing firms	All firms	Export firms	Import competing firms	All firms
<u>1. Industrialized Nations</u>						
Australia	0.7	-0.4	0.2	-12.5	0.8	-0.1
Austria	0.2	-0.7	-0.2	-16.1	1.6	-0.3
Belgium-Luxembourg	-3.1	0.4	0.0	-7.3	1.5	-0.2
Canada	-5.7	0.0	0.1	-10.3	0.3	0.0
Denmark	-3.8	-0.5	-0.8	-9.8	0.6	-0.9
Finland	1.0	0.1	0.4	-7.2	0.9	0.3
France	-2.9	0.1	-0.1	-8.3	0.6	-0.1
Germany	-4.1	0.1	-0.3	-8.4	0.8	-0.4
Ireland	-1.3	1.3	0.8	-6.1	2.3	1.0
Italy	-1.9	0.3	0.3	-6.1	0.7	0.3
Japan	-4.2	0.3	0.1	-6.4	0.3	0.0
Netherlands	-2.0	0.3	-0.2	-6.0	1.3	-0.3
Norway	-3.3	-0.3	-0.3	-9.1	0.3	-0.3
Sweden	-3.0	-0.3	-0.2	-7.6	0.4	-0.4
Switzerland	-0.9	-0.3	-0.3	-4.5	0.2	-0.5
United Kingdom	-1.8	0.5	0.5	-7.6	0.9	0.5
United States	-3.9	0.0	0.0	-7.3	0.1	0.0
<u>2. Developing Nations</u>						
Argentina	-3.4	-0.1	-0.2	-4.3	0.0	-0.2
Brazil	-2.6	0.0	-0.1	-3.6	0.1	0.0
Colombia	-3.8	0.2	-0.1	-4.5	0.3	0.0
Greece	-1.9	0.0	-0.1	-2.0	0.0	-0.1
Hong Kong	-0.2	-0.2	-0.2	-0.2	0.0	-0.1
India	-2.3	0.0	-0.1	-2.7	0.0	0.0
Israel	-0.9	-0.1	-0.1	-0.8	-0.1	-0.1
South Korea	-4.8	1.1	0.8	-7.9	1.5	0.8
Mexico	-2.3	0.0	-0.1	-1.6	0.1	0.0
Portugal	-0.5	-0.2	-0.2	-0.3	-0.2	-0.1
Singapore	-1.1	-0.1	-0.3	-1.1	0.0	-0.2
Spain	-1.9	0.0	-0.1	-2.3	0.1	0.0
Taiwan	-9.8	2.5	0.9	-14.9	3.2	0.7
Turkey	-2.5	0.0	-0.1	-2.6	0.0	0.0
Yugoslavia	-0.7	0.0	0.0	-0.5	0.0	0.0

