AN EVALUATION OF THE EFFECT OF THE DILLON
ROUND ON THE UNIT VALUE AND VOLUME OF
UNITED STATES IMPORTS AND EXPORTS

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ABSTRACT

AN EVALUATION OF THE EFFECT OF THE DILLON
ROUND ON THE UNIT VALUE AND VOLUME OF
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By

Robert Goodman

The objective of this investigation is to measure
the effects of multilateral tariff reductions on the
foreign trade sector of the American economy. In addi-
tion to yielding figures on price and quantity changes
of total exports and imports, the study is disaggregated
into several commodity groups, permitting us to observe
differential effects of tariff changes between groups
which are subject to different elasticities.

A comparison of average price and quantity trends
between products subject to tariff reductions and closely
related commodities not receiving concessions reveals the
effect of tariff liberalization on the unit value and
volume of United States' imports. Least-squares regres-
sion analysis is used to develop demand functions in
order to determine the "tariff sensitivity" of United
States' exports.

Furthermore, a measure of the net effect of the 1960-61 Tariff Conference on the United States' terms of trade is constructed, and estimates are made of the welfare and employment effects resulting from these negotiations.

The results indicate that, while certain commodity categories were significantly affected by the reduction of tariff barriers, in the aggregate, the tariff concessions negotiated at the Dillon Round had a relatively minor effect on the American economy.

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The responsibility for all the errors and, hopefully, some of the valid contributions are my own.

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CHAPTER I

INTRODUCTION

It has long been recognized in the pure theory of international trade that the complete elimination of trade barriers would lead to the optimization of world welfare to the benefit of all. However, while theoretically appealing, nationalistic self-interest severely hampered efforts to reduce restrictions on trade flows. Only with the ratification of the General Agreement on Tariffs and Trade in 1947, were the ground rules laid for meaningful negotiations between interested parties on the reduction and elimination of impediments to free trade. Thus, multilateral collective bargaining was seen as a feasible and practical approach to this complex task. Under its auspices six rounds of tariff negotiation have taken place--Geneva, 1947; Annecy, 1949; Torquay, 1951: and Geneva, in 1956, 1960-61; and 1964-67.

Under the authorization of the 1958 extension of the Reciprocal Trade Agreements Act, the United States negotiated tariff concessions at the 1960-61 Geneva Conference (Dillon Round). In this thesis, I will

investigate the effect of multilateral tariff reduction
on the unit value and volume of the imports and exports
of the United States, and construct a measure of the gain
or loss in the United States terms of trade. As a second
step, I shall estimate the net change in welfare and
employment resulting from these negotiations.

Chapter II will place the 1958 extension of the
Reciprocal Trade Agreements Act in historical perspective.
An in-depth discussion of the Act itself will then provide
an adequate background in which to view the 1960-61
negotiations. In Chapter III, I will review and criti-
cally examine previous studies concerning similar
negotiations.

The method and empirical procedure employed in
this thesis will be discussed in Chapter IV. Chapters V
and VI will present the results of the investigation by
considering the impact of the 1960-61 negotiations upon
U.S. imports and exports, respectively. Chapter VII
will be reserved for an examination of the effects of
the Dillon Round with respect to welfare, the terms of
trade and employment.

Chapter VIII will explore the implications of our
findings for future U.S. tariff policy.

CHAPTER II

UNITED STATES COMMERCIAL POLICY

The Trade Agreements Program

Since the Passage of the Tariff Act of 1930, it has
been the policy of the United States Congress to enter
into trade agreements with foreign governments. The
original Act limited this authority to a period of three
years from June 12, 1934, the date of enactment of the
Act. Known as the Reciprocal Trade Agreements Act it
authorized the President to sign commercial agreements
with other nations reducing existing U.S. duties by as
much as 50 per cent in exchange for parallel concessions.
Subsequently, the Act was amended, extending the authority
of the President as it became clear to the Congress that
only through healthy international relations could a
sound domestic economy be maintained.[1]

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[1]The original Act limited the authority of the
President to enter into foreign trade agreements to a
period of three years from June 12, 1934, the date of
enactment of the Act (48 Stat. 943). The President's
authority to enter into foreign trade agreements has
been extended from time to time as follows: Pub. Res.
No. 10, 75th Cong., for 3 years from June 1937 (50
Stat. 24); Pub. Res. No. 61, 76th Cong., for 3 years
from June 12, 1940 (54 Stat. 107); Pub. Law 66, 78th
Cong., for 2 years from June 12, 1943 (57 Stat. 125);

In no sense, however, did the Reciprocal Trade
Agreement program contemplate the complete abandonment
of protection. In 1948, the 80th Congress inserted the
peril-point requirement into the Act. While this clause
was eliminated in 1949, it was restored in 1951, and the
escape clause was also written into law. Under the
peril-point provision, the United States Tariff Commission
was required to investigate and determine, in advance of
any negotiation, the limit of "safe bargaining" beyond
which tariff reduction may imperil any branch of home
industry. Duties were not to be cut if such action
threatened serious injury to American industry. Moreover,
the escape clause required an upward adjustment of a duty
reduced as a result of negotiations if serious injury
were shown to have resulted from that reduction. Upon a
finding by the Tariff Commission that a product on which
a concession had been granted was being imported in such
increased quantities, either absolute or relative, as to
cause or threaten serious injury to the competing
domestic industry, the President was authorized to

Pub. Law 130, 79th Cong., for 3 years from June 12, 1945
(59 Stat. 410): Pub. Law 307, 81st Cong., for 3 years
from June 12, 1948 (63 Stat. 697); Pub. Law 50, 82nd
Cong., for 2 years from June 12, 1951 (65 Stat. 72); Pub.
Law 215, 83rd Cong., for 1 year from June 12, 1953 (67
Stat. 472); Pub. Law 464, 83rd Cong., for 1 year from
June 12, 1954 (68 Stat. 360): Pub. Law 86, 84th Cong.,
from June 12, 1955 until the close of June 30, 1958 (69
Stat. 162); and Pub. Law 85-686, until the close of June
1962 (72 Stat. 673). In July, 1962, the Trade Expansion
Act renewed this authority for 5 years until June, 1967.

withdraw or modify the concession. Thus, protection
could be restored even though the output of American
industry was growing, provided only that imports were
growing faster. Since 1949 the number of applications
per year has ranged between six and twelve. In 1960
seventeen cases were initiated eight of which were the
outgrowth of peril-point investigations.[2]

Later extensions of the Trade Agreement Act went
further by defining an industry as the producers of
single products, thus making it relatively simple for
a multiple product industry to claim injury even though
increased foreign competition was limited to only one
of its several products.[3]

Reinforcing the protectionist policy embodied in
the escape clause was the insertion of the National
Security clause in the 1955 extension of the Act. The
withdrawal or modification of a concession was authorized
when such a concession induced increases in imports in
such quantitities so as to threaten the national security.

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[2]See, I. Kravis, "Trade Agreement Excape Clause",
American Economic Review, June, 1954; and W. B. Kelly,
"The Expanded Trade Agreements Escape Clause, 1955-61,"
Journal of Political Economy, February, 1962.

[3]The 1955 act (69 Stat. 162) defines the "domestic
industry" as "that portion or subdivision of the producing
organizations manufacturing, assembling, processing,
extracting, growing, or otherwise producing like or
directly competitive products or articles in commercial
quantities." Thus, the Tariff Commission was to confine
its investigations to that part of the operations of
multiproduct producers who make a particular article.

The law (National Defense Amendment of 1955) however,
defines almost any adverse effect on economic welfare,
such as increased unemployment, loss of government
revenues, or loss of skills or investment, as consti-
tuting impairment of national security.

In sum, the Trade Agreements Act and related
legislation sought to expand American exports by an
exchange of concessions, but it continued to afford
effective protection for most domestic industries
encountering foreign competition. Most importantly,
U.S. legislation refused to tolerate injury to domestic
producers from such competition. Any such injury, real
or threatened, was not to be tolerated. These two
philosophies, namely trade liberalization and "no injury"
to domestic industry appear to be incompatible with the
concept of economic efficiency, if indeed this is the
goal to be sought through tariff negotiations. However,
if political considerations were the prime movers of
U.S. commercial policy during this period, they become
quite consistent.[4]

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[4]The dual nature of U.S. tariff policy has been
stressed by D. Humphrey, American Imports, New York,
1955; p. 107, and M. E. Kreinin, Alternative Commercial
Policies, MSU International Business and Economic Studies,
1967; p. 18.

The 1958 Extension

This thesis focuses on the 1958 extension of this

legislation, since it was under its authority that the

United States negotiated the trade agreements at Geneva

in 1960-61. With the expiration of the 1955 extension

of the Act, the Administration asked for a five-year

extension coupled with tariff-cutting authority of 25

per cent (or, alternatively, three percentage points).

This decision was heavily influenced by the emergence

of the European Economic Community (EEC). The integration

schedule called for the reduction of inter-community

tariff rates by 30 per cent by 1963. It was feared that

with the lowered rates among the Six, the United States

would be put at a distinct competitive disadvantage,

affecting some $3.2 billions of American goods, or almost

20 per cent of all United States exports if we use the

1957 figures. At the same time that the six countries

lowered their internal barriers to each other, by 30 per

cent, they were to begin erecting a common external

tariff (CXT) to outside products.[5] As Senator Douglas

saw it, "the only way American exports can compete in

this market is if the United States has the authority

to negotiate to get their common external tariff lowered

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[5]The proposed CXT was to be an arithmetic average
of the tariffs of the six countries existing prior to
January 1, 1958.

at the same relative rate as the internal rates are lowered, or by 30 per cent in the first four to five-year period.[6]

The first stage of the CXT was due to go into effect on January 1, 1962. Negotiations between the United States and the Common Market were to begin in late 1960. If Congress acted favorably on the President's request, the full 25 per cent authority could be used since no part would have expired. Furthermore, this authority, with its carry-over provision which permitted tariff cuts negotiated during the five-year period to be put into effect any time after that period, would have put the United States close to parity with the 30 per cent authority of the Common Market.

On August 20, 1958, following extensive hearings before the House Ways and Means Committee and the Senate Finance Committee, Congress passed the Trade Agreements Extension Act of 1958. However, this Act fell short of the Administration's request. Under its auspices the President was authorized to negotiate trade agreements with foreign governments for a period of four years from the close of June 30, 1958 through June 30, 1962. Under this legislation, any rate as of July 1, 1958 could be reduced in not more than four annual stages by

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[6]85th Congress Second Session, Senate Report 1838, July 15, 1958.

one of the following three alternatives: (1) by not more
than 20 per cent; (2) by not more than two percentage
points or its equivalent in the case of specific duties;
or (3) down to 50 per cent ad valorem. The latter two
alternatives are significant in cases where the rates
prevailing in 1958 were below 10 per cent or above 62.5
per cent respectively. In the case of any duty to which
(1) or (2) applied, no amount of decrease becoming
initially effective at one time was to exceed 10 per cent
or 1 percentage point ad valorem of the rate of duty
existing on July 1, 1958, respectively. Where the decrease
was down to 50 per cent ad valorem the decrease was not to
exceed one-third of the total amount of the reduction under
the foreign trade agreement.

The new legislation strengthened the "no injury"
concept (i.e., tariff liberalization with a minimum of
injury to domestic industry) by extending the time period
for peril-point investigations from 120 days to six
months. Peril point studies were to be made prior to
negotiations for new trade agreements and provide the
President with factual information and recommendations
regarding the level below which the tariff rate on each
product could not be lowered without causing or threatening
injury to the industries producing them. The two month
extension was seen as an aid to the Tariff Commission
insofar as it enabled the Commission to make more complete

investigations of a large number of commodities at one time. To further protect domestic industries and to facilitate peril point inquiries, the Tariff Commission was given the power to subpoena any and all documents or records pertinent to the subject matter under investigation. In the event that the peril point investigation revealed that an industry was threatened by import of a product which had been the subject of a trade agreement, that industry could file for immediate escape-clause relief. This relief could be in the form of an increase in the duty or an additional import restriction. Furthermore, by allowing a narrow definition of the market, the legislation permitted an industry to apply for escape-clause relief by showing only that a small segment of the industry had sustained injury.

The National Security Amendment was modified so that no action would be taken to reduce the duty on an article if the President found that such a reduction would threaten to impair the national security. This strengthened the existing law which required that no action be taken which would endanger domestic production needed for projected national defense requirements. Thus the 1958 extension, while authorizing further tariff liberalization, still incorporated the protectionist philosophy found in previous extensions of the Act.

In light of this new authority, it clearly remained to be seen whether the United States, armed with the bargining weapons provided by the new extension of the Trade Agreements Act, could secure for itself a larger share of the European Market.

The "Dillon" Round

On September 1, 1960, the United States commenced trade negotiations with the European Economic Community (EEC) and 17 other countries[7] with the purpose of further liberalization of foreign commerce between the contracting parties. The concessions granted by the United States were in return for reciprocal concessions obtained from the members of the General Agreement on Tariffs and Trade (GATT). Under GATT, all concessions are initially negotiated bilaterally directly with individual countries, normally the principal supplier, or with a customs union acting as a unit on behalf of its member governments, but the concessions are extended multilaterally to the other contracting parties. The U.S. also adheres to the most-favored nation's principal, whereby it accords to other governments, not contracting parties to the GATT, those concessions granted to the principal suppliers.

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[7]The contracting parties were: Israel, Portugal, Pakistan, Austria, Canada, Denmark, Finland, New Zealand, Norway, Peru, Sweden, Switzerland, the United Kingdom, Haiti, India, Japan and Cambodia.

Because of the scope and complexity of the nego-
tiations, the conference, the fifth held for the purpose
of reducing tariffs on a multilateral basis, was
organized in two phases. The first phase, which com-
menced on September 1, 1960, was concerned principally
with negotiations held under the provisions of Article
XXIV:6 of the GATT with the six EEC countries negotiating
as a unit.[8] During the second, or reciprocal phase,
which began on May 29, 1961, the United States completed
an exchange of new tariff concessions among interested
countries.

Concessions granted by the United States at the
1960-61 Tariff Conference were made on products selected
from 89 of the 99 commodity subgroups of imports
(Schedule A nos. 010-990).[9] Imports of products within
the subgroups receiving concessions totalled $1,827.1
million in 1960. Almost half of this trade ($376.5

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[8]The rules of the General Agreement relating to
customs unions and free-trade areas are contained in
Article XXIV. It sets out a series of rules designed
to ensure that a customs union shall in effect lead
to the reduction and elimination of barriers within the
area without raising new barriers to trade with the out-
side world. It also contains the conditions under which
a customs union is accepted as an exception to the most-
favored-nation clause.

[9]The ten commodity subgroups in which no concessions
were granted were edible animals; animal oil and fats
edible; cocoa, coffee and tea; unmanufactured cotton;
cotton semi-manufactures; coal and related fuels; petro-
leum and products; lead and manufactures; tin, zinc and
manufactures.

million) consisted of machinery and vehicles. About 11 per cent ($194.4 million) was in vegetable foods and beverages, and about 9 per cent ($170.9 million) was in metals and manufactures other than machinery and vehicles. Tariff reductions were also granted on products from the following commodity groups: Textile fibers and products, $97.4 million; non-metallic minerals, $97.1 million; chemicals and related products, $61.8 million; inedible vegetable products other than fiber and wood, $50.5 million; wood and paper products, $48.8 million; edible animals and edible animal products, $44.4 million; inedible animals and inedible animal products, $43.5 million; and miscellaneous products, $141.7 million. Thus about 20 per cent of the total dutiable imports of the United States in 1960 were the subject of tariff concessions.

These concessions involved almost 1,200 statistical classes of products (Schedule A groups 0-9). The duty reductions were primarily in the magnitude of 20 per cent. However, for those products for which existing duties were equal to 10 per cent _ad valorem_, or less, or greater than 62.5 per cent _ad valorem_, reductions of more than 20 per cent were realized. The larger reductions resulted from the exercise of the authority to lower duties by 2 percentage points, or, in the case of

duties in excess of 62.5 per cent ad valorem, down to
50 per cent.

Of the concessions granted by the U.S., (See Table
I), imports from the country of direct negotiation
accounted for $1,224.8 million of the total from all
sources. As a consequence of the United States'
adherence to the most favored-nation's principal,
another $490.6 million in concessions were granted.

Nearly two-thirds of the items were negotiated
directly with the EEC. The direct concessions granted
to the EEC covered imports totaling $794.8 million in
1960, a volume of trade which was almost four times
that involved in any other bilateral negotiations
concluded at the conference. Concessions granted to
the U.K. and Canada ranked second and third, respectively.

In return for concessions granted, the U.S. was the
recipient of tariff reductions on a wide range of com-
modities, totaling $2,764.5 million of exports. Thus,
about 25 per cent of total U.S. exports to the GATT
nations in 1960 were subject to a downward revision in
tariff rates.

The Dillon Round and the European
Economic Community

The Treaty of Rome, which established the Common
Market, provides that the tariffs of the EEC Member

TABLE 1.--U.S. imports in 1960 from countries negotiating with U.S. in the
reciprocal phase 1960-61 Tariff Conference.

Imports of Products on Which Concessions Were
Granted and Imports of All Products
(Millions of dollars)

| Negotiating Country | Imports from country named in column 1 | | | | | |
| | Products on which concessions were granted | | | All products | | |
	In negotiation with country in column 1	In negotiation with other countries	In all negotiations	Dutiable	Free	Total
Total	1,224.8	490.6	1,715.4	5,891.3	2,697.0	8,588.3
EEC	794.8	30.4	825.2	2,003.1	255.4	2,258.5
Austria	10.2	4.4	14.6	48.7	.9	49.6
Cambodia	--	--	--	a	6.6	6.6
Canada	64.5	71.4	135.9	1,204.2	1,708.0	2,912.2
Denmark	1.3	10.8	12.1	79.3	19.1	98.4
Finland	2.8	1.3	4.1	19.8	32.3	52.1
Haiti	.6	.3	.9	6.5	11.1	17.6
India	51.3	2.8	54.1	161.6	68.4	230.0
Israel	17.5	1.3	18.8	24.0	3.3	27.3
Japan	18.5	54.1	72.6	1,046.7	79.8	1,126.5
New Zealand	11.6	b	11.6	59.4	57.6	117.0
Norway	5.4	3.0	8.4	66.3	21.4	87.7
Pakistan	c	d	e	9.3	26.7	36.0
Peru	6.0	f	6.0	67.2	101.7	168.9
Portugal[g]	9.2	1.6	10.8	28.9	8.6	37.5
Sweden	12.6	43.2	55.8	120.4	50.0	170.4
Switzerland	17.1	23.2	40.3	166.3	29.7	196.0
United Kingdom	201.4	242.8	444.2	779.6	216.4	996.0

[a]$ 2,000.   [b]$34,000.   [c]$41,000.

[d]$24,000.   [e]$65,000.   [f]$29,000.

[g]Includes Azores and Madeira Islands.

* U.S. import figures are valued f.o.b.

Source: Department of State, General Agreement on Tariffs and Trade,
Analysis of United States Negotiations, Volume III, p. 152.

States shall be gradually replaced by a common external tariff by January 1, 1970, and in any event not later than January 1, 1973. On January 1, 1961, the Member States took the first in a series of scheduled moves to align their individual tariffs with that of the common tariff. This first alignment entailed the abandonment of the individual schedules of tariff concessions previously contracted in GATT with the contracting parties, including the United States.

The GATT permits contracting parties to establish a customs union provided that the new external tariff is, on the whole, not higher than the general incidence of the duties applied by the constituent members prior to the formation of the union. The common external tariff which the EEC published in 1960 was based largely on the arithmetic average of the national rates of the Member States, although some rates were negotiated internally among the Six.

The GATT recognizes that a customs union necessarily involves an alignment of existing individual national tariffs with a new common tariff; hence some duties may go up, others down, while some may remain the same. If rates are increased on those products for which Member States had previously undertaken commitments against increases, the GATT requires the customs union to compensate those contracting parties having rights

either as initial negotiators of the commitment, or as principal suppliers of the commodities involved. The GATT requires that the calculation of compensation take account of duties which are being reduced from previous levels as well as the bound duties being increased. The criteria and procedures for these negotiations are set forth in Article XXIV:6.

The U.S. objective in the Article XXIV:6 negotiations was to obtain a set of concessions in the CXT which, in terms of trade coverage and duty level, would satisfactorily replace all of the concessions which the U.S. had had with the six separate countries prior to the formation of the EEC customs union. Of the 2,900 tariff positions in the new common tariff, the U.S. identified 1,100 where it potentially had claims for compensation under Article XXIV:6 either as initial negotiator or major supplier. As a result of these negotiations, nearly three-fourths of the direct concessions obtained by the United States were at rates equivalent to or below duty rates which the individual Member states had previously applied. Table 2 summarizes the concessions obtained by the U.S. as a result of the 1960-61 Conference.

The amount of trade dealt with in both phases of the 1960-61 Conference was sizeable, cumulatively amounting to more than $4.6 billion of U.S. exports

TABLE 2.--Trade with the U.S. of countries from which
direct concessions were obtained in
the 1960-61 Tariff Conference.

(U.S. $1 million-1960)

Country	Imports from the U.S. of Products on which U.S. Obtained Direct Concessions	Total Imports from U.S.
Total	2,764.5	12,037.6
EEC (XXIV:6 Negotiations[c])	1,200.0	--
EEC (Reciprocal Negotiations)	1,000.0	3,400.0
Austria	7.6	80.0
Cambodia	1.1	8.9
Canada	75.1	3,632.7
Denmark	17.2	108.7
Finland	4.6	56.3
Haiti	a	25.1
India	43.6	608.6
Israel	21.8	118.4
Japan	23.4	1,554.2
New Zealand	4.5	74.6
Norway	20.8	89.1
Pakistan	b	168.8
Peru	6.7	142.1
Portugal	8.9	38.4
Sweden	9.6	298.8
Switzerland	19.6	246.5
United Kingdom	300.0	1,386.4

[a]$46,000.

[b]$79,000.

[c]The Commission of the EEC negotiated with the United States and other contracting parties having contractual rights in Member States' tariff concessions that had to be modified as the Six started moving toward the Common External Tariff.

*Imports from the U.S. are reported c.i.f.

Source: Department of State, General Agreement on Tariffs and Trade, Analysis of United States Negotiations, Volume I, p. 106.

and imports in 1960. Thus, the negotiations affected almost 14 per cent of total U.S. trade in 1960 and more than 20 per cent of the total trade conducted with the participating members of GATT.[10]

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[10]Total U.S. trade (imports and exports) of merchandise for consumption amounted to $34.9 billion in 1960. Trade with the contracting parties in the 1960-61 negotiations amounted to approximately $20.6 billion in 1960. U.S. Department of Commerce.

CHAPTER III

RECENT STUDIES OF PAST NEGOTIATIONS

Before analyzing the economic consequences of the
tariff reductions negotiated in the Dillon Round, a
discussion of previous investigations pertaining to
recent tariff conferences will provide a basis for
comparing our results to those obtained by other inves-
tigators.

A comparison between volume changes of dutiable
and duty-free imports has frequently been taken as an
index of the effectiveness of tariff changes. In a
study prepared for the House Ways and Means Committee,[11]
Piquet found that in four out of five economic classes,
imports of dutiable commodities exhibited larger per-
centage growth rates between 1947 and 1956 than did
duty-free items (See Table 3). This period saw trade
agreement activity at the Geneva, Annecy, and Torquay
Conferences. These results lead him to the conclusion
that "reduction of tariffs by trade agreement have been
moderately effective." His technique implicitly assumes

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[11]See Foreign Trade Policy, Compendium of Papers,
Subcommittee, on Foreign Trade Policy of the House
Committee on Ways and Means, 85th Congress, 2nd Session,
Washington, 1958.

TABLE 3.--Imports, dutiable and free, by economic classes, 1947, 1953, 1956.

(Imports in millions of dollars)

Economic Class	Dutiable Imports			Percentage Change 1946-1956	Free Imports			Percentage Change 1947-1956
	1947	1953	1956		1947	1953	1956	
Crude Materials	583	1,117	1,321	+125.8	1,181	1,496	1,755	+ 48.6
Crude Foodstuffs and Animals	138	308	217	+ 57.2	879	1,877	1,818	+106.8
Manufactured Foodstuffs	617	945	1,135	+ 84.2	39	163	32	- 17.9
Semi-Manufactures	420	1,272	1,564	+272.4	825	1,406	1,438	- 74.3
Finished Manufactures	452	1,217	2,034	+350.0	530	978	1,177	+122.1
Total	2,212	4,859	6,271	+183.5	3,454	5,920	6,220	+ 80.1

Source: H. Piquet, "Tariff Reductions and U.S. Imports," Foreign Trade Policy, Compendium of Papers, 85th Congress, 2nd Session, Washington, 1958.

that in the absence of tariff reductions, for each of
the five classes studied, the two lists (dutiable and
free) would exhibit parallel trends in growth.
Furthermore, for his method to be valid, each list
must contain the same commodities in 1956 as in 1947.
In this connection, he must account for the possibility
of the transfer of a free item to the dutiable list
during this period, since such a shift would imply
growth in dutiable imports even in the absence of tariff
reductions. Indeed, such a shift would reflect an
increase in protection. As a further complication,
domestic price changes during this period may not have
affected both groups equally. Thus, the differential
impact of inflation on the two groups may distort his
findings. He makes no attempt to isolate the effect
of the tariff reductions on import prices, nor does he
investigate the effectiveness of multilateral tariff
negotiations in stimulating United States exports.

Lawrence B. Krause examined the relationship
between tariff concessions negotiated at Torquay in
1951 and the subsequent increase in the volume of U.S.
imports.[12] Since the method he employed is similar to
the one used in this thesis, a detailed decription of
the procedure is reserved for a later chapter. Basically,

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[12]Lawrence B. Krause, "United States Imports and
the Tariff," American Economic Review, Proceedings, May,
1959, pp. 542-51.

his work is an analysis of the behavior of two groups
of commodities. One group contains many of the manu-
factured products on which the U.S. import tariff was
reduced at the Torquay negotiation, while the other is
comprised of similar manufactured products on which
tariffs were not changed during these negotiations.
These groups were made comparable by selecting the
non-reduced group in such a way as to equate it with
respect to commodity composition and the average value
of imports of the reduced group. The analysis concerns
the dollar volume of U.S. imports of the two groups in
the years 1952 to 1956, while the years 1949-51 were
used as a base. In the absence of tariff reductions,
and except for possible strong substitution effects
between the two groups, these two groups would be
expected to exhibit parallel changes in growth. Thus,
a priori, an index reflecting the volume of imports
for the reduced group should exceed that of the non-
reduced group for all years subsequent to the tariff
reductions. His results are presented in Table 4.
A student's "T" test reveals that although the volume
of imports of both groups rose sharply in this period,
the difference between them was statistically insig-
nificant. He then divided the reduced items according
to the amount of the 1951 tariff reduction and to the
tariff levels after the reduction. It is particularly

TABLE 4.—Index of volume of imports into the United States
of products whose tariffs were reduced by the Torquay
Agreement, of similar products with no tariff
reductions, and of all finished
manufactured imports.

(1949-51 Average = 100)

	Reduced	Non-reduced	All Finished Manufactures
1949-51	100.0	100.0	100.0
1952	124.3	129.2	124.8
1953	182.7	165.5	133.1
1954	162.5	157.1	133.8
1955	197.0	206.1	160.9
1956	241.2	230.7	194.7

Source: L. B. Krause, "United States Imports and
the Tariff," American Economic Review, Proceedings, May,
1959; p. 543.

interesting to note that volume increases were greatest
for those commodities where tariff rates had been
reduced by 30 per cent or more. The general conclusion
of the statistical analysis is that the tariff reductions
negotiated at Torquay in 1951 cannot be regarded as a
significant factor in the import increases that followed.

In explaining his findings, Krause suggests that
political as well as economic considerations may explain
why the Torquay negotiations had no significant effect
in increasing imports. Among the economic considerations
he lists the effect of price increases in reducing the
protectiveness of tariffs levied in the form of specific
rather than ad valorem duties, the nature of import
demand, (i.e., the response of imports to changes in
tariff rates) and the incentives for foreign producers
to supply increased U.S. import demand. When import
prices increase, the ad valorem equivalent of specific
duties declines, as does the restrictive effect of the
tariff. Since this will tend to stimulate imports of
both the reduced and control groups, the impact of tariff
reduction becomes more difficult to ascertain. With
regard to import demand, Krause postulates that import
demand is more than proportionately responsive to large
tariff changes. He finds that increases in trade were
much greater for items whose tariffs were reduced by
more than 30 per cent, than for items receiving reductions

of less than 30 per cent. Since more than 90 per cent
of the base value of concessions were in the latter
category, he concludes that no significant increase in
trade could be demonstrated in part because tariff
reductions on major commodities were insufficient to
induce substantial increases in imports.

Among the political considerations, he discusses
the "no injury" concept as it applied to permitted
tariff reductions, as well as the tariff structure as
it existed in 1951. With regard to the latter, he
points out that tariff reduction may not have been
adequate to remove the "excess" protection enjoyed by
the commodities in the reduced group.[13] Thus, he con-
cludes, tariff levels, rather than changes are of prime
importance. However, Kreinin[14] suggests that, since
1951, cumulative tariff reductions have lowered U.S.
tariffs to a level where further reduction may induce
significant changes in U.S. imports.

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[13]For empirical evidence of the restrictive nature
of the U.S. tariff see M. E. Kreinin, "On the Restrictive
Effect of the Tariff--A Note on the Use of the Balassa
Index", The Manchester School, January, 1966, pp. 75-80.

[14]Mordechai E. Kreinin, "Effect of Tariff Changes on
the Prices and Volume of Imports," The American Economic
Review, June, 1961, p. 320. The realized average duty on
dutiable imports was 47 per cent in 1934 and 14 per cent
in 1949. As a result of further tariff reductions, the
average duty declined to 12 per cent in 1952. Kreinin's
results suggest that the average duty may have been reduced
by as much as 15 per cent (down to 11.2 per cent ad valorem)
as a result of the 1956 negotiations.

Krause does not take into consideration the effect of price changes which may have occurred in the two groups of commodities, but rather assumes that import prices reflected fully the tariff changes in the reduced group. If imports are a relatively small part of total consumption, it is possible for a large increase in imports to occur with little decline in import price. The benefit of the tariff reduction would accrue to the foreign suppliers in the form of higher export prices. The subsequent increase in import volume would occur as foreign suppliers, having absorbed the tariff concessions, become capable of more vigorous price competition with import-competing products.

Although Krause finds no significant difference between the means of his two samples, this may be due in large part to the degree of aggregation of the two groups. The tariff elasticity of demand will vary directly with the degree of substitutability. While total imports are a small part of total consumption it is a relatively large share when compared to the shares of the individual commodity groups which comprise the total. Thus, it may be expected that the tariff elasticity of demand of separate commodity categories is larger than that for all commodities taken together. It may be, therefore, to our advantage to apply a test of statistical significance to each of these subgroups

as well as to the aggregates in order to more accurately evaluate the effectiveness of any reduction in duty level.

Mordechai E. Kreinin, who recognized Krause's failure to take into account possible changes in prices, investigated data from the 1955 and 1956 GATT negotiations.[15] The effects of a tariff reduction are shown as taking place in four stages. The tariff reduction leads to a decrease in import prices and improved terms of trade for supplying nations. This price decline leads to an increase in the volume of U.S. imports and subsequently to a reduction in U.S. employment.

The empirical technique is essentially the same as that used by Krause but differs in so far as Kreinin takes into account the changes in prices that attented the tariff cuts. His results are summarized in Tables 5 (A) and 5 (B).

For the 1955 negotiations it was found that one-third of the benefit of the duty reductions was passed on to domestic consumers while two-thirds accrued to foreign suppliers in the form of higher export prices.

The 1956 negotiations were much larger and extended over a longer period of time. Greater weight is given to these results since the reduced group was 14 times larger than that for 1955. The reduced group underwent

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[15]Ibid.

TABLE 5.--Price and quantity changes of imported commodities.

A

Between 1954 and 1956

	Change in Export Prices per cent	Quantity Change per cent	Tariff Reduction as Per cent of		Average Value of Imports of the Reduced Group for 1954 and 1956 (million dollars)
			Price per cent	Tariff per cent	
All Commodities					
Reduced Group	+1.2	+59	8.7	28	51
Nonreduced Group	-4.8	+17			
All Commodities--but Excluding Textiles					
Reduced Group	+1.6	+38	7.9	35	25
Nonreduced Group	-4.2	+28			

B

Between 1955 and 1959

					Average Value of Imports of the Reduced Group for 1955 and 1959
All Commodities					
Reduced Group	+3.9	+66	2.5	15	877
Nonreduced Group	+2.4	+54			
Finished Manufactures					
Reduced Group	+5.4	+80	2.8	13	392
Nonreduced Group	+3.9	+68			

Source: Mordechai E. Kreinin, "Effect of Tariff Changes on the Prices and Volume of Imports," The American Economic Review, June, 1961, p. 315.

a 15 per cent reduction in tariffs. Foreign suppliers

and domestic consumers shared about equally the benefit

of the tariff concessions, while the volume of the

reduced group experienced a 12 per cent increase over

the control group.

Using the results from the 1956 GATT conference a

measure of the gain in welfare and loss in employment

is made. Although these estimates are "relatively

inconsequential," Kreinin indicates that in order to

get a more accurate result the concessions obtained by

the U.S. should also be considered.

Kreinin suggests that Krause's pessimism concerning

the effectiveness of tariff reductions in stimulating

imports is unwarranted. Although Kreinin's reduced

group did show a 12 per cent increase over the non-

reduced group, no test of significance was made. In

fact, Krause has a differential of almost 11 percentage

points which he finds could have occurred by chance.

Finally, Kreinin finds that the increase in

economic efficiency as a result of 1956 negotiations

approached $31.5 million as an upper limit. The loss

of employment associated with the tariff reduction was

estimated at most to be 20,000 workers. When concessions

both received and granted are considered, the former

estimates could be expected to be larger and the latter

smaller. Basevi[16] presents a general equilibrium model that allows measurement of the welfare effect of trade restriction in money terms, when the terms of trade are affected by restriction. The effect is measured on the basis of consumer surplus. Applying this measurement to 1960 data for tariffs and trade of the United States, he shows that because of the improvement in the terms of trade, the U.S. enjoys a positive net welfare effect, but a relatively small one. According to the estimates of elasticities and an assumed average tariff level of 15 per cent, the net gain lies between $258 million and $558 million (at almost 0.11 per cent of national income). Alternatively, these estimates are made under the assumption of a uniform tariff rate of 13 and 17 per cent. His results suggest that a reduction in the tariff level from 15 to 13 per cent would result in a gain of $269 million as imports increased. However, the corresponding reduction in the terms of trade reduce the welfare impact by $287 million. Thus, on balance, it would appear that the impact of unilateral tariff reduction from 15 to 13 per cent ad valorem would be a net welfare loss to the United States of a mere $18 million. However, multilateral tariff reduction would be expected to mitigate some of the loss due to a decline

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[16]G. Basevi, "The Restrictive Effect of the U.S. Tariff," American Economic Review, Vol. LVIII, September, 1968; pp. 840-852.

in the terms of trade. While not directly comparable with Kreinin's results, both seem to support the conclusion that the impact of multilateral tariff reduction on U.S. welfare (i.e., economic efficiency) would be slight.

In a more recent study, Krause examined the product pattern of competitive U.S. imports of manufactured goods for the period 1947-1958.[17] Two models are postulated. The first is static in nature and relates the dependent variable, the ratio of imports to domestic shipments M_i^t/X_i^t, to a multiplicative function of the variables (P_{fi}^t/P_{di}^t), $(1 + T_i^t)$, and (X_i^t), where X_i^t is an income proxy and P_{fi}^t and P_{di}^t are the foreign price (FOB) of good i in year t and the price of the domestically produced good in year t, respectively. T_i^t is the U.S. ad valorem tariff rate for good i in year t. The equation has the form:

$$M_i^t/M_i^t = K^t(P_{fi}^t/P_{di}^t)^{\alpha_1} (1 + T_i^t)^{\alpha_2} (X_i^t)^{\alpha_3} v$$

when K^t is a constant in year t for all commodities, and v is a random error term. This form of equation was selected since it yields parameters in the form of elasticities. Through a double logarithmic transformation the equation was made linear yielding;

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[17] Lawrence B. Krause, "U.S. Imports, 1947-1958," Econometrica, April, 1962, pp. 221-38.

$$\log (M_i^t/X_i^t) = \log K^t + \alpha_1 \log (P_{fi}^t/P_{di}^t)$$

$$+ \alpha_2 \log (1 + T_i^t) + \alpha_3 \log (X_i^t) + \log v^t. \qquad [1]$$

A second model was necessary to illustrate the changes that occurred in the structure of U.S. imports over a period of time. Using a first difference transformation of [1] the following logarithmic equation is derived:

$$[\log (M_i^t/X_i^t) - \log (M_i^{t-n}/X_i^{t-n})] = \log C_i^{t-n}$$

$$+ \beta_1 [\log (P_{ti}^t/P_{di}^t) - \log P_{fi}^{t-n}/P_{di}^{t-n}]$$

$$+ \beta_2 [\log (1 + T_i^t) - \log (1 + T_i^{t-n})]$$

$$+ \beta_3 [\log (X_i^t) - \log (X_i^{t-n})]$$

$$+ \log v^t - \log v^{t-n}. \qquad [2]$$

where: C_t^{t-n} is a constant for all products but changes depending on the years involved, n is the period over which the difference is taken, and the expected value of $\log v^t - \log v^{t-n} = 0$. The regressions were run on two categories of goods which were grouped according to their physical characteristics. The critical consideration here was the elasticity of the short-run supply curve of the major raw materials incorporated into the product. The more price-inelastic the supply curve of the raw material, the more price-inelastic the supply

curve of the commodity. Thus, variations in quantities imported of the goods will reflect mainly changes in total demand. Those goods greatly affected by the conditions of the raw materials (i.e., highly income elastic) were classified in group B, while all others were classified in group A.

The results of the first model conformed to a priori expectations. The parameter α_1 and α_3 are shown to be significant, however α_2, the tariff elasticity coefficient, is not significantly different from zero. Thus, it is implied that in the short-run the tariff level is not an important variable in determining the pattern of U.S. imports. At this point, Krause does give some attention to differences between product groups. By stratifying his sample of group A products in one year (1958) and estimating equation [1] for each group separately, he was able to make inter-industry comparisons. Only four of eight industrial groups tested turned out to be significant. They were wood and paper products, leather and leather products, non-metallic minerals, and metal and metal products.

The analysis using Model II indicated that as the time period under investigation was lengthened, the responsiveness of imports to changes to relative prices increased. It is also apparent that if the time period

is sufficiently long the change in the tariff level
becomes a significant factor in explaining increases
in import volume. This indicates that in any study of
tariff reductions it is necessary to allow a time period
of sufficient duration in order to allow the economy to
adjust to the new tariff liberalizations.[18]

Krause concludes that since 1947, changes in U.S.
tariff rates have not led to substantial increases in
imports. He attributes this to the fact that tariffs
are reduced only on commodities where there is some
assurance that imports will not increase, and that the
tariff reductions since 1947 themselves have been small.
However, for larger reductions in tariff rates it is
expected that the volume of imports would respond
significantly. These results are consistent with his
Torquay investigation.

More recently, Albert Small[19] investigated the
effect of the tariff reduction negotiated at Geneva in

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[18]For more comprehensive analysis of long run tariff
elasticities of demand, see B. A. DeVries, "Price
Elasticities of Demand for Individual Commodities Imported
into the United States," _International Monetary Fund Staff
Papers_, (April, 1951), pp, 397-419; R. J. Ball and K.
Marwah, "The U.S. Demand for Imports, 1948-1958," _The
Review of Economics and Statistics_, Vol. XLIV, No. 4,
November, 1962, pp. 395-401, and H. B. Junz and R. R.
Rhomberg, "Prices and Exports Performance of Industrial
Countries, 1953-1963," _IMF Staff Papers_, July, 1965,
pp. 244-71.

[19]Albert S. Small "The Effect of U.S. Tariff
Reduction on U.S. Import Volume," _MSU Business Topics_,
Graduate School of Business Administration, Spring, 1967.

1960-61. Following a procedure similar to Krause and Kreinin he constructed indices of trade growth between 1961 and 1964 for those items which received tariff reductions, and similar commodities which did not. A comparison of the growth rates of the two groups revealed that in 54 of the 97 "pairs" studied, the rate of growth of the reduced group exceeded that of the control group. This is taken as "persuasive" evidence that tariff reductions were instrumental in significantly increasing trade.

His analysis implicitly assumes that the tariff reduction is fully reflected in import prices. Thus his analysis is subject to the same weakness as Krause's 1959 study (see footnote 12). In light of the fact that almost 1,200 statistical classes of products were subject to tariff reduction, the sample of 97 paired commodities seems highly inadequate as a representative sample. No attempt is made to explore the effect of the reduction on individual commodity groups, nor does he analyze the consequences of the Dillon Round with regard to U.S. exports.

Balassa and Kreinin[20] considered the possible effects of the Kennedy Round of tariff negotiations

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[20]B. Balassa and M. E. Kreinin, "Trade Liberalization Under the 'Kennedy Round': The Static Effects," The Review of Economics and Statistics, Vol. XLIX, No. 2, May, 1967; pp. 125-37.

(1965-67) on U.S. trade and welfare. They provide
estimates on the impact of a 50 per cent across-the-
board tariff reduction on industrial materials and
manufactured goods under the static assumptions of given
tastes and unchanged technology. Their results suggest
that while both U.S. exports and imports will increase
as a result of the Kennedy Round, these increases will
be in the order of only 5.6 per cent and 7.0 per cent
of the 1960 trade figures, respectively. These per-
centages imply a slight increase in the trade balance,
but this could be easily reversed by limited relative
price changes. Furthermore, the gain in welfare is also
expected to be quite small when compared to gross
domestic product. The latter result is consistent with
the findings of Basevi and Kreinin. Their results,
however, are heavily dependent upon their assumptions
and must await empirical verification.

The Dillon Round dealt with a substantial range of
products (1,200 statistical categories of imports were
affected) and the reductions in duty were in the
magnitude of about 20 per cent. It would therefore seem
likely that the import concessions granted in the 1960-61
negotiations would fulfill Krause's requirement for an
effective tariff policy. However, Balassa and Kreinin
suggest that even a 50 per cent across-the-board reduction
in industrial tariffs may not be sufficient to induce

significant increases in trade. In sum, it appears that
no a priori judgement can be made on the effectiveness
of the 1960-61 Geneva Conference in stimulating U.S.
trade.

Except for the Balassa-Kreinin study, the foregoing
analysis concentrated on the effectiveness of tariff
liberalization in inducing changes in the volume of U.S.
imports. In analyzing the consequences of tariff con-
cessions for the U.S. economy it is just as important to
focus attention to those concessions received, as it is
to consider the tariff reductions granted by the United
States. This thesis will therefore examine the effec-
tiveness of the Dillon Round in stimulating both the
imports and exports of the United States. Following
Kreinin's lead, I will obtain a measure of the change
in the U.S. terms of trade as well as the gain in welfare
and the net effect on employment of the 1960-61 Geneva
negotiations.

CHAPTER IV

METHODOLOGY AND EMPIRICAL PROCEDURE

United States Imports

In order to estimate the effect of tariff concessions granted by the United States, I shall compare changes in prices and volume of imports between products on which tariff concessions were granted (reduced group), and immediate substitutes which were not subject to tariff reductions (non-reduced group).

The tariff concessions granted in 1960-61 were made effective by three different methods, at three different dates: (1) where the reduction in the tariff existing on July 1, 1958 is a maximum of two percentage points, the tariff concession was made effective in July, 1962; (2) wherever the concession reduces the tariff existing on July 1, 1958 by not more than 20 per cent, the reduction was made effective in two stages of ten per cent each, with the second stage terminating on July 1, 1963; (3) for duties reduced down to fifty per cent _ad_ _valorem_, the concessions were made effective in three stages ending in July, 1964. As a consequence, the concessions will be studied by comparing the years 1960 and 1965. The time

period is sufficiently long to allow the economy to adjust to the effects of the tariff liberalizations.

Since in the absence of tariff concessions the reduced group and the non-reduced group (i.e., the control group) would be expected, in the aggregate, to exhibit similar price and quantity movements, a comparison between them should reveal the effect of the tariff concessions. An implicit assumption is made here that the prices and volume of the non-reduced group will not be affected by the tariff concessions. However, since the two groups are substitutes, the non-reduced category will move in a predictable fashion which depends upon the cross-elasticity of demand. Specifically, the prices of the non-reduced group may be checked by the lower prices of its close substitutes subject to tariff concessions. Thus, the estimated changes in foreign export prices obtained through a comparison between the two groups may be regarded as an upper limit, while the reductions in U.S. import prices represents a lower limit to the gain by the domestic consumer. Similarly, the rate of growth in volume of the non-reduced group may be retarded by the increased demand for substitutes in the reduced group. The estimate of the change in volume attributed to the tariff concessions must therefore be regarded as an upper bound. Furthermore, since the commodities considered are substitutes in consumption it can be assumed that income

elasticities are similar. Thus, any changes in income
affecting one group of commodities will also affect the
other group by the same magnitude. Therefore, deviations
in trend between the two groups will be attributed to
tariff reductions. Concessions granted by the United
States are subject to a Most-Favored-Nations clause, and
therefore total imports[21] of a commodity (i.e., imports
of a given classification regardless of origin) of the
reduced and non-reduced classifications may be used.

In considering imports, in addition to aggregative
figures for price and quantity changes, the results will
be broken down to several commodity groups, which will
permit us to observe differential effects of tariff
changes between groups which are presumably subject to
different elasticities. Foodstuffs and raw materials
will be omitted since many of these commodities are subject
to quotas which inhibit the functioning of the price
mechanism.

The groups to be considered are Textile Fibers
and Manufactures,[22] Wood, Paper and Printed Matter,

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[21]U.S. statistics report import value f.o.b.

[22]The first short-term international cotton textile
agreements were effective for the 12-month period ending
on October 1, 1962. These were followed by the Long-Term
Cotton Textile Agreement. In considering textiles, we
will select an equal number of reduced and non-reduced
commodities subject to the same controls of the inter-
national cotton textile agreements. Accordingly, any
effect of these restrictions would presumably be compen-
sated for in both samples.

Non-Metallic Minerals, Metals and Manufactures including Machines and Vehicles, Chemicals and Related Products, and Miscellaneous Products.

Principally, the following steps will be taken. For each commodity on which the tariff was reduced, the tariff change as a per cent of the 1960 tariff as well as of the 1960-65 unit value will be computed. As a second step, computations will be made for the percentage change in unit value and volume between the two periods. These percentages will then be aggregated first for each of the six commodity categories, and then for all imports, in each case using average 1960-65 import values as weights. The same computations, with the exception of those relating to tariff changes will be performed for the immediate substitutes of those commodities (i.e., the non-reduced group).

The selection of substitutes will be made from the listings in the United States Tariff Commission publication, Tariff Schedules of the United States Annotated (1965) and Report No. FT 110, United States Imports of Merchandise for Consumption published by the United States Commerce Department. The latter lists all dutiable commodities reported according to the classification established in Schedule A, Statistical Classification of Commodities Imported into the United States, and is presented in the order of the numbered classifications

in that Schedule. Within each category a further disaggregation classifies articles according to industry affiliation. Each item is assigned a commodity number.[23] For each commodity which received a concession during the Dillon Round a closely related article in consumption can be found by pairing similar commodity numbers. For example, Schedule A, item 9470120, Rifles, Breech Loading, valued at over $10 each not over $25 each, can be paired with item 947130, Rifles, Breech Loading, valued at over $25 each not over $50 each. In some cases, items in one category are effective substitutes for commodities in another category. For instance, silk gloves compete with woolen gloves even though they are listed under separate subheadings. Where matchings of this sort provide better substitutes than the former method, they will be utilized. Of course, to obtain a precise measure of the degree of substitutability of one product for another, cross-elasticity estimates should be used. In the absence of such information, however, our procedure assures only closely related products. The degree of substitutability between commodities is unknown. The implication of this qualification for our results will

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[23]In 1960 the commodity code numbers were based on the Schedule A classification. In 1963 a revision regrouped items according to the TSUSA schedule. This revision will have no effect on the selection of substitute commodities.

be made clear in the discussion of the results.
Furthermore, care will be taken to equate the average
value of each commodity to that of its substitute.
This procedure is necessary to assure a meaningful
measure of the statistical significance of our results.

The measure of the foreign export price of each
commodity will be calculated by dividing its value in
a given year by the corresponding quantity. In a report
issued by the National Bureau of Economic Research[24] the
shortcomings of using unit value indexes as a measure of
foreign prices were explicitly stated. Unit values are
values per unit of quantity within detailed export or
import classifications. However, since the classifica-
tions must in total cover every item of trade, they
cannot be narrowly specified unless their number is
increased far beyond any practical limit. As a result
of the lack of close specification, there is never any
certainty that a change in unit value adequately
represents a change in price; the unit value of a trade
classification can change, even though all prices are
constant, if there is a shift from one quality or type
of item to another.

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[24]Irving B. Kravis, Robert E. Lipsey, Philip J.
Bourque, Measuring International Price Competitiveness,
National Bureau of Economic Research, A Preliminary
Report, Occasional Paper 94, 1965.

Unit value indexes also suffer from the fact that for many manufactured products quantitites are not reported at all and unit values are simply unavailable. This shortcoming is particularly noticeable when dealing with imports of machinery and vehicles. For this reason it will be necessary to include the relatively few items for which quantity statistics are available in the Metals and Metal products category.

Unit values may not be good indicators of price competitiveness in international trade. One disadvantage is that the weights differ from one country to another, due to the differing composition of export trade. Therefore, it is not possible to say whether an apparent change in price relations results from differences in price movements or from the difference in the weighting of identical price changes. Secondly, exports which encounter severe foreign competition may tend to disappear from a country's exports thus undergoing a lowering of its weight in any index. Even if constant weights are used in the index of export unit values, the worse the competitive position of a country in a commodity, the lower the weight of that commodity in that country's index. These criticisms, while common to all price indexes, cannot be ignored when using unit values as a measure of foreign prices. Since no other

source of foreign export prices is available, these deficiencies have to be overlooked.

A comparison between the changes in the prices and quantities of the reduced and non-reduced groups, along with the data on the tariff reductions as a per cent of price, will make it possible to divide the tariff cut between a rise in the foreign export price and a decline in the U.S. import price.

The tariff rates referred to in this thesis are the nominal or apparent _ad valorem_ rates. Where specific or compound duties prevailed they were converted to their _ad valorem_ equivalent. However, we must be aware that it is the _effective protective rate_ and not the nominal duty that determines the level of protection. This is the rate of protection provided for an economic activity, as distinct from the rate of protection provided for a product. It indicates the percentage rise in the value added of the marginal unit which is made possible by the tariff system.

In the simple case of an imported commodity, i, which has only one input, also an importable, j, let the tariffs applicable to commodity i and input j, be t_i and t_j respectively. Then the value added per unit of i in the absence of tariffs is:

$$V_i = P_i (1 - A_{ji})$$ [1]

and the value added per unit of i due to the imposition of a tariff is:

$$V_i' = P_i [(1 + t_i) - A_{ji} (1 + t_j)]$$ [2]

where P_i is the unit price of i in the absence of tariffs and A_{ji} is the proportion of j in the cost of i in the absence of tariffs. The effective protective rate is:

$$G_i = \frac{V_i' - V_i}{V_i}$$

or

$$G_i = \frac{P_i [(1 + t_i) - A_{ji} (1 + t_j) - (1 - A_{ji})]}{P_i (1 - A_{ji})}$$

$$= \frac{t_i - A_{ji} t_j}{1 - A_{ji}}$$ [3]

For example, if under free trade the duty-free price of commodity i is $100 and is subject to a duty of 20 per cent, while the duty levied on imported input j which constitutes half its value is 10 per cent, the effective rate of protection is equal to 30 per cent. Clearly, the higher the apparent tariff on the finished good and the lower the level of duty imposed on the raw materials used in its production, the higher will be the effective protection.

In our example, suppose that through negotiations the tariff on the finished product i is lowered by 25 per cent to 15 per cent _ad_ _valorem_ while the tariff on input j remains the same. The effective level of protection would be lowered from 30 to 20 per cent or a decline of 33-1/3 per cent. Had the reduction in duty also applied to the raw material the decline in effective protection would have been the same as the nominal decline, namely 25 per cent.

In general, the change in the effective tariff on the finished good will be greater than or less than the change in its nominal rate depending on whether the change in the nominal rate exceeds or falls short of the change in duty on the imported inputs.[25]

Bela Balassa[26] has provided us with estimates of the nominal and effective rates of protection for the five major trading areas of the world. His results are summarized in Table 6.

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[25]For a full discussion of the effective protective tariff see W. M. Corden, "The Structure of a Tariff System and the Effective Protective Rate," _The Journal of Political Economy_, June, 1966, pp. 221-237. See also Giorgio Basevi, "United States Tariff Structure: Estimates of Effective Rates of Protection of United States Industries and Industrial Labor," _The Review of Economics and Statistics_, May, 1966, pp. 147-160.

[26]Bela Balassa, "Tariff Protection in Industrial Countries: An Evaluation," _Journal of Political Economy_, December, 1965, p. 588.

TABLE 6.--Nominal and effective tariff rates, by Country, 1962.

	Nominal Tariff Weighted Average	Effective Tariffs Weighted Average	Uniform Tariff Equivalent
United States	11.6	20.0	16.7
United Kingdom	15.5	27.8	23.8
Common Market	11.9	18.6	17.3
Sweden	6.8	12.5	12.2
Japan	16.2	29.5	26.4

Source: B. Balassa, "Tariff Protection in Industrial Countries: An Evaluation," Journal of Political Economy, December, 1965, p. 588.

His figures suggest that among these five areas Japan has the highest rate with respect to both nominal and effective duties, while the United Kingdom ranks second. The United States and the EEC are about even with the United States having a higher effective level and the EEC slightly higher in its level of nominal tariffs. At the opposite end of the scale is Sweden which has the lowest level of nominal as well as effective rates.

One purpose of calculating effective protective rates is to obtain indications of the direction in which resources are pulled by the tariff structure. Effective rates determine, along with production substitution elasticities, the production effect of a tariff. On the other hand, nominal rates determine, together with expenditure substitution elasticities, the expenditure or consumption effect. It may therefore be both neces- sary and desireable to take into account the effective protective level of a tariff when considering the con- sequences of its reduction. However, this study will not employ effective tariff rates for several reasons. First of all, the effective level of protection has not been computed for Canada and several other countries which account for an important share of United States trade. Secondly, those estimates which are available

are not sufficiently disaggregated for our purposes.
Many of the industrial products studied in this thesis
enter as inputs in the production of other products.
Thus a decrease in nominal tariff rates would lower
effective protection by more than the change in nominal
duties. In order to estimate the change in the effec-
tive tariff structure it would be necessary to know
the share of dutiable inputs used in the production of
each commodity studied. Since this information is not
available it is impossible to measure the change in the
effective rates of protection. This problem is com-
pounded when we realize the possibility of more than
one input in the production process.

Kreinin[27] has suggested that in the course of
successive GATT negotiations manufactured goods (i.e.,
categories 5-8 SITC) were probably subject to larger
tariff cuts than those on semi-finished or primary
commodities. If his hypothesis is correct, changes in
effective rates have exceeded changes in nominal rates.
Therefore, it would seem that for the United States
the use of nominal rates would impart an upward bias
to the effect of tariff negotiations on trade flows.

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[27]M. E. Kreinin, "'Price' vs. 'Tariff' Elasticities
in International Trade--A Suggested Reconciliation,"
American Economic Review, Vol. LVII, September, 1967,
pp. 891-894.

United States Exports

Since tariff concessions granted to the United States differed from one trading partner to another, it will be necessary to evaluate their effect on the volume of exports on a country by country basis. Of the 23 members of the GATT participating in the 1960-61 Conference, the European Economic Community, Canada, and the United Kingdom accounted for approximately 93 per cent of the value of all concessions received by the United States.[28] Thus, we will confine ourselves to investigating the effectiveness of tariff reductions in stimulating U.S. exports to these areas.

Demand Factors

The relationship between movements of domestic demand and imports accounts for the largest part of the variation in import volume. Imports may be seen as consisting of materials and semi-manufactures going into current production, imports of finished goods going into final demand for current use, and imports for inventory replenishment. Therefore, as the level of economic activity within an area increases, ceteris paribus, we would expect a rise in the volume of goods imported.

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[28]In 1960, these areas accounted for 70 per cent of all U.S. exports of manufactured commodities.

Thus, if we are to explain variation in U.S. exports to a given area, it will be necessary to account for the influence of demand pressures within the country of destination.

Because of the cyclical diversity of the demand for various products, complex relationships appear to govern the movements of total imports (U.S. exports) over the business cycle. The movement of various U.S. export categories is likely to diverge over the business cycle, with some categories, like exports of machinery and other manufactures, being far more cyclically sensitive than materials or foodstuffs. These phenomena may be caught empirically by estimating export functions separately for various product categories.

Supply factors

Relative price relationships may play a significant role in determining the flow of U.S. exports to a particular area. A priori, one would expect movements in U.S. prices relative to the prices of domestically produced import-competing goods to be of prime importance in the choice between these substitutes.

Of equal importance is price competition from third country suppliers. Changes in U.S. prices vis á vis foreign sources of supply may also be expected to

be an important factor in determining the share of U.S. exports to a given market.

Another factor which can be expected to influence trade flows, and the one to which we will direct our attention, is the level of tariffs. The imposition of a tariff creates a divergence between the price paid by the importer and that received by the exporter. Thus, a price decline resulting from a tariff reduction has a different supply effect as compared to one resulting from a lowering of the U.S. offer price. In the former case, the U.S. supplier will receive the same return per unit (or even higher if the entire tariff change is not passed on to the consumer), while in the latter one, he will receive less. This would lead one to expect that the quantity of goods exported would react differently to an equal percentage change in the two elements.

Specification of the Export Function

Our analysis will be conducted at the commodity group level (Schedule B commodity categories 3-9).

The volume of U.S. exports of commodity group i to area j was taken from the following identity

$$X_i^j = u_i(P_i^j + X_i^j - E_i^j) \qquad [1]$$

where X_i^j is the quantity of U.S. exports of commodities of the i<u>th</u> commodity group, which were subject to tariff reductions, to area j.[29]

u_i is the portion of domestic consumption of the i<u>th</u> commodity group provided by U.S. exports.

P_i^j is the quantity of domestic production of category i in area j.

E_i^j is exports of category i commodities from area j. Solving for X_i^j we get

$$X_i^j = \frac{u_i}{1 - u_i} \ (P_i^j - E_i^j) \qquad\qquad [2]$$

Practical considerations forced an alteration of the equation. It was felt that adjusting domestic production for exports would not greatly affect the variable P_i^j since area j exports of commodities imported from the United States in considerable amounts could be expected to be quite small in relation to total domestic production. Furthermore, since data for domestic production of various commodity groups by area was not readily obtainable, an index of overall industrial production (P_j) (1960=100) for each area will be used. This index has performed well as a

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[29]When referring to commodity group i we will only consider commodities within group i which have received tariff concessions. This procedure will minimize the risk of the dependent variable reflecting random variations unrelated to tariff concessions.

proxy for economic activity and will be used in this investigation as an activity-demand variable.[30]

The ratio of the share of the ith commodity group provided by U.S. exports to the share provided by domestic production ($u_i/1-u_i$), will be considered to be a function of the ratio of the U.S. export price in area j to the domestic wholesale price prevailing in area j, the ratio of U.S. wholesale prices of commodity group i to the wholesale price of commodity group i quoted by foreign suppliers,[31] and the level of domestic production.

$$u_i/1-u_i = f \left(\frac{Pxi}{Pdi} , \frac{Pusi}{Pci} , P_j \right)$$ [3]

where Pxi is the U.S. export price index of group i to area j. (1960=100)

Pu.s.i is the domestic wholesale price index of commodity group i in the United States. (1960=100)

Pci is the wholesale price index of commodity group i of foreign suppliers, (1960=100) and,

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[30]See "An Econometric Analysis of International Trade, an Interrelated Explanation of Imports and Exports of OECD Countries," by F. G. Adams, H. Eguchi, and F. Meyer-zu-Schlochtern. OECD Economic Studies Series, January, 1969.

[31]Since tariff reductions received by the United States were extended to all other supplying nations as a result of the Most-Favored-Nation clause, the import prices of the U.S. and foreign suppliers in area j would decline by the same percentage. Thus any relative price shift can be attributed to changes in wholesale prices which are unrelated to duty levels.

Pdi is the wholesale price of domestically produced group i commodities in area j. (1960=100)

The U.S. price of group i in area j is taken from the following identity:

$$Pxi = Pu.s.i \ (1 + Ti) \qquad [4]$$

where Ti is the average nominal *ad* *valorem* tariff rate levied on goods within commodity category i by area j.

Combining equations [2], [3] and [4] yields:

$$X_i^j = f \ [(P_j, \ \frac{Pu.s.i}{Pdi}, \ \frac{Pu.s.i}{Pci}, \ (1 + Ti)] \qquad [5]$$

The dependent variable X_i^j will be taken as a linear combination[32] of the four variables P_j, $\frac{Pu.s.i}{Pdi}$, $\frac{Pu.s.i}{Pci}$, and $(1 + Ti)$

$$X_i^j = \alpha_o + \alpha_1 P_j + \alpha_2 \left(\frac{Pu.s.i}{Pdi}\right) + \alpha_3 \left(\frac{Pu.s.i}{Pci}\right)$$

$$+ \ \alpha_4 \ (1 + Ti) + e_i \qquad [6]$$

where α_o is a constant for all product classes, and e_i is a random disturbance term. The equations will be run on quarterly data for the period 1955-I--1965-IV.

With the exception of the EEC, the reductions made by Canada and the United Kingdom were put into effect in

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[32]While non-linear (logarithmic) demand functions estimated by least-squares procedures have the desired property of yielding parameters in the form of elasticities, preliminary work suggested the linear form produced a better statistical fit to the data.

one stage beginning in 1962. In the EEC case, the concessions granted were in terms of the ultimate Common External Tariff to which the national tariff of the Member States were to move during the transitional period which was to be completed by the end of 1963. It is reasonable to expect that the responsiveness of U.S. exports to changes in the tariff level will increase as the time period under investigation is lengthened. Furthermore, U.S. exports may not respond immediately to once-and-for-all changes in the tariff structure, but rather only after some lag. A lagged response to changes in the relative price structure also seems a reasonable assumption since it may take time for the export sector of the U.S. economy to adjust to the new level of foreign demand. Unfortunately, we have no reason to suspect any particular lag structure which would best describe the responsiveness of U.S. exports to tariff liberalizations or relative price changes. However, a useful technique to deal with the problem of multiple lags has been developed by Shirley Almon.[33]

The "Almon" technique has the virtue of permitting the data to determine the shape of the weight distribution of the lag structure rather than imposing a

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[33]For a completely detailed account of the mathematical underpinning and actual procedures of this technique see, Shirley Almon, "The Distributed Lag between Capital Appropriations and Expenditures," Econometrica, Vol. 33, No.1, January, 1965, pp. 178-195.

completely pre-determined shape. The idea is that if
we can find the "true" weights for a few periods in
the time interval, this will be sufficient to define
the mathematical function which best describes the
distribution of the weights[34] for all periods. If,
for example, the weight distribution turns out to be
a straight line, finding two points on this line is
all that is necessary to develop a formula which will
give the values for all points on this line. In general,
however, this technique is best suited for establishing
the values of weights whose configuration is more
complicated than that of a straight line. This tech-
nique will be employed in our analysis in order to
determine the responsiveness of U.S. exports to changes
in relative prices and tariff levels over time.

In estimating equations for U.S. exports as
basically determined by foreign demand, prices in the
importer's country, prices in the United States, prices
of competitive supply countries, and the level of tariffs,
we will use the weighted average[35] of the foreign whole-
sale prices listed in column (2) to represent the

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[34]In this connection, the weights appear in the
equation as the best-linear-unbiased-estimates of the
coefficients of the lagged independent variable.

[35]The weights will be total U.S. exports of the
$i\underline{th}$ commodity group to area j in year t.

competitive supply price in the equations for U.S.
exports to the areas listed in column (1).

(1)

European Economic Community

United Kingdom

Canada

(2)

Canada, United Kingdom

Canada, European Economic Community

United Kingdom, European Economic Community

Once the coefficients are determined, implicit
tariff elasticities of foreign demand for U.S. exports
of category i may be calculated by assuming a given
percentage change in the tariff level, and calculating
the absolute increase in exports resulting from it.
The ratio of this change to the mean value of the
dependent variable will then represent the tariff
elasticity. Mathematically, if $X = a + tT$ and $\Delta X =$
$t \, \Delta T$, then a 1 percentage point decline in T would
cause an absolute increase in exports of $\Delta X = t. 01$.
Thus, the ratio of ΔX to X, $\Delta X/X$, where X is the mean
of the dependent variable represents the percentage
increase in U.S. exports in response to a 1 percentage

point decline in the tariff level. The latter constant
will be taken as the tariff elasticity of import demand
implied by the equation coefficients. In this connec-
tion, to find the total effect of the tariff reduction
on export performance over time, we will algebraically
sum the coefficients of the lagged tariff variable.
This sum is designated by t, above. A similar technique
may be used to estimate the total relative price elas-
ticity of the demand for U.S. exports of category i.
In this case however, the algebraic sum of the price
coefficients may be used as an indication of the total
price multiplier. Both terms, pr and pc, have the U.S.
wholesale price index in the numerator.

Once the tariff elasticity is determined it is
a simple matter, given the actual reduction in the
tariff rate, to estimate the percentage increase in
U.S. exports which occurred as a result of tariff
liberalization. Applying the percentages to the value
exported in the base year 1960 will yield the absolute
increase in U.S. exports of each commodity group in
response to tariff reductions. The sum over all groups
will be taken as the effect of the Dillon Round
negotiations on all U.S. export trade.

Perhaps the major shortcoming of this technique
lies in the necessity of implicitly assuming an infinite
elasticity of export supply. In other words, our model

assumes that any increase in foreign demand resulting from tariff reductions can be supplied at constant costs. The implication of this assumption with regard to the measurement of the total terms of trade effect is discussed in Chapter VII. Exports occupy a relatively small share of total production in the United States, in contrast to many European nations, making the U.S. export supply elasticity much higher than elsewhere. Furthermore, during the early 1960's the U.S. economy was characterized by high levels of unemployment. This excess capacity coupled with high resource mobility suggests that export expansion could be brought about without significant increases in the cost of production.

The only direct estimation of supply functions appears in the IMF's world trade model.[36] This model includes three equations, one each for the United States, Western Europe, and the rest of the world, relating export prices of the region to an internal price level (except in the case of the rest of the world), the volume of exports and time (presumably to allow for technological change shifting the demand schedule over time). The estimated price elasticities of export supply are: plus 15.0 for the United States,

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[36]R. R. Rhomberg, R. Randall, and L. Boissoneault, "Effects of Income and Price Changes on the U.S. Balance of Payments," IMF Staff Papers, 11:1 (March, 1964) pp. 58-124.

plus 2.5 for Western Europe, and plus 1.2 for the rest

of the world. If these elasticities are reasonably

indicative of the order of magnitude of the supply

elasticities involved in international trade, they

imply that the tacit assumption of an infinite elasticity

of supply (in the case of the United States) used in

ordinary least-squares estimation of demand curves from

time series data may be warranted.

Data

A thorough-going revision in United States tariff

nomenclature took effect on August 31, 1963, under the

Tariff Classification Act. It thus becomes necessary

to use two statistical sources from which to obtain

data on United States imports. For 1960, data are

available from Report No. Ft. 110, <u>U.S. Imports of</u>

<u>Merchandise for Consumption</u>, while Ft. 246, <u>U.S. Imports</u>

<u>for Consumption and General Imports</u> will be used to

obtain 1965 import data. The latter is presented in

terms of the classifications contained in the <u>Tariff</u>

<u>Schedules of the United States Annotated (TSUSA)</u>. Only

those classifications unaffected by the nomenclature

changes can be directly compared between the years 1960

and 1965. For those classifications which were revised,

comparisons will be made by matching commodity descrip-

tions and tariff levels existing after the negotiations.

The information provided by the commodity description will enable the Schedule A commodities to be uniquely matched to their TSUSA counterparts. The Unites States Department of State reports, Analysis of U.S. Negotiations, Vols. I-IV, contain the relevant information concerning the tariff concessions both granted and received by the United States.

Commodity groups will be made comparable by using the Schedule A commodity classifications. In some instances where a commodity appearing in one group in 1960 was re-classified to another in 1965, it will be considered as belonging to the original Schedule A classification. This will be done in order to maintain uniformity as well as make the results comparable with those studies done prior to the revision. A commodity will be eliminated from the study if there is inadequate quantity information or if a suitable substitute is unavailable.

With regard to exports, value data are available for the years 1955-1965 in the Department of Commerce publication Report No. Ft. 420, United States Exports of Domestic and Foreign Merchandise Country of Destination by Subgroup. In 1964, there was a revision of the 5-digit Schedule B numbers to a new Schedule B numbers to which they were assigned. This list will be used when

necessary for maintaining consistency within subgroups before and after the conversion.

While quantity statistics are called for in the model, constant dollar amounts (1960=100) will be used in order to make cross-product calculations possible. The U.S. domestic wholesale price indices by subgroup which will be used are available for the years 1955-1965 from the U.S. Department of Commerce publication, Statistical Abstract of the United States, while quarterly wholesale price indices of the United Kingdom and Canada may be obtained from various issues of The Board of Trade Journal, published by Her Majesty's Stationary Office, and the Bank of Canada's Statistical Summary respectively.

An aggreagte index of the wholesale price indices of the EEC will be constructed by aggregating the various country indices, weighting each country series by its share of U.S. exports in year t. References to the sources of these price series and all raw statistical data are presented in the statistical appendix.

CHAPTER V

THE EFFECT OF THE DILLON ROUND
ON UNITED STATES IMPORTS

Table 7 summarizes the results of this investigation with regard to American imports. The reduced group, (i.e., those commodities which underwent tariff revision) included two hundred and twenty-three commodities amounting to $745.9 million in 1960, or 52.3 per cent of the total value of U.S. import concessions.[37] The non-reduced group, or control group, was comprised of an equal number of close substitutes in consumption, valued at $735.2 million in 1960. The two groups were made comparable by selecting the non-reduced group in such a way as to roughly equate it to the reduced group with respect to commodity composition and the average value of imports in the two years under consideration. The latter constraint on our sample was necessary to assure that any differences observed in the behavior of the two groups were due to the tariff changes and not merely reflecting differences in the weights.

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[37]The United States negotiated tariff reductions on industrial imports valued at $1,494 million in 1960.

TABLE 7.--The effects of tariff concessions on the prices and volume of United States imports.

	Change in Export Prices per cent	Change in Quantity per cent	Tariff Reduction as Per cent of		Percentage Change in		Sample Size	Average Value 60-65 (Millions)
			Price per cent	Tariff per cent	Export price	Import price		
All Commodities								
Reduced Group	11.01	30.24	2.39	23.68	+0.32	-1.08	223	943.8
Non-reduced Group	10.69	7.43					223	938.4
Wood and Paper								
Reduced Group	-5.73	37.40	2.50	22.25	+1.06	-0.54	24	31.7
Non-reduced Group	-7.69	8.66					24	32.9
Textiles and Related Products								
Reduced Group	21.85	33.34	3.94	22.67	+0.28	-3.66	53	29.5
Non-reduced Group	21.57	-33.93					53	30.2
Non-Metallic Minerals								
Reduced Group	7.79	40.89	2.01	21.67	+1.72	-0.29	15	111.3
Non-reduced Group	6.07	-21.53					15	109.1
Metals and Metal Products (Inc. Machines and Vehicles)								
Reduced Group	11.99	32.81	1.94	24.21	+0.24	-1.70	45	693.3
Non-reduced Group	11.75	16.79					45	688.1
Chemicals and Related Products								
Reduced Group	-7.39	-6.30	6.29	24.30	+2.15	-4.14	56	47.5
Non-reduced Group	-9.54	-17.79					56	49.2
Miscellaneous Products								
Reduced Group	35.74	4.77	4.00	20.41	+3.59	-0.41	30	30.3
Non-reduced Group	32.15	-9.47					30	28.9

For all commodities, the reduced group experienced a 23.68 per cent reduction in the average tariff rate existing in 1960, which constituted 2.30 per cent of 1960 prices. These results suggest that the average ad valorem rate for the reduced group declined from 9.7 per cent to 7.4 per cent of 1960 prices.[38] Between 1960 and 1965, the average foreign export price of the reduced group increased by 11.01 per cent, while that of the non-reduced group increased by 10.69 per cent, a difference of 0.32 percentage points. Thus foreign export prices rose by a total of 0.32 per cent over the five year period, while the import price fell by 1.98 per cent, (i.e., 2.30-0.32). These results suggest that more than 85 per cent of the tariff concessions granted by the United States was passed on to the domestic consumer, while less than 15 per cent accrued to foreign exporters in the form of higher export prices. Our estimates seem to support Kreinin's expectation that a larger share of subsequent tariff reductions would be passed on to domestic consumers.[39]

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[38]The average nominal ad valorem rate for all manufactured commodities has been estimated to have been 11.6 per cent in 1962. Therefore, it seems that the reduced group was subject to a below average level of protection. See B. Balassa, "Tariff Protection in Industrial Countries: An Evaluation," op.cit.

[39]M. E. Kreinin, "Effect of Tariff Changes on the Prices and Volume of Imports," American Economic Review, June, 1961, p. 317, Footnote 17.

These price changes were accompanied by a 22.81 per-
centage point differential between the rates of growth
of the two groups.

The tariff reduction of 23.68 per cent is in
excess of the 20 per cent authority permitted by the
1958 extension of the Trade Agreements Act. One possible
explanation of this result lies in the fact that a major
portion of United States imports which underwent
revision in tariffs during the negotiations were sub-
jected to compound rates of duty, consisting of ad valorem
rates coupled with specific duties. When reduced to
their ad valorem equivalents, in many cases, effective
reductions in duty of more than 20 per cent were
realized. Another factor which may account for the
size of the overall reduction in the tariff is the
authority to reduce tariffs down to 50 per cent
ad valorem, or by 2 percentage points. If the duty
is above 62.5 per cent, or below 10 per cent ad valorem,
this authority constitutes more than a 20 per cent
reduction.

Since the products comprising the non-reduced
group were selected on the basis of their substitutability
for commodities of the reduced group, and thus by
virtue of experimental design, competitive, it becomes
necessary to consider the effect of the tariff concessions

upon the non-reduced category. The price of the non-reduced group may have risen by more than 10.69 per cent had they not been affected by the reduced prices of their close substitutes which were the subject of tariff reductions. Thus, our estimate of the 1.98 percentage point differential accruing to the consumer must then be viewed as a minimum. The growth of import volume must also be considered in light of its effect upon the growth of the non-reduced group. The increase in imports of commodities of the non-reduced category may have been retarded by the increased demand for its close substitutes. Our figure, therefore, tends to overstate the effect of tariff concessions on the volume of American imports.

With these qualifications in mind, it is possible to obtain an approximate measure of the "nominal tariff elasticity" of import demand and export supply. This concept can best be defined as the response of a change in import volume to a change in prices of manufactures associated with a change in their tariff. No allowance has been made for changes in input prices. In response to a decline in the import price of 1.98 per cent, import volume increased by 22.81 per cent suggesting an elasticity of import demand of -11.5. Since price changes may be understated while quantity changes may

be overstated, our estimates are probably upper-bound elasticities. Kreinin,[40] using a cross-sectional approach subject to the same limitations as our method, analyzed data pertaining to the negotiations in 1955 and 1956. The elasticities implicit in his results are -7.1 for all commodities excluding textile between 1954 and 1956 and -9.2 for finished manufactures in the period 1955-1959.

Since we allowed a longer period of adjustment than did Kreinin, it is not surprising that our overall elasticity estimate appears to be somewhat larger. Similarly, an increase in the average foreign export price of 0.32 per cent induced an increase in export volume to the United States of 22.81 per cent yielding an export supply elasticity of +71.3. This figure suggests that, in the long-run, the assumption of an infinite elasticity of export supply fairly approximates existing conditions. For short-run analysis, however, this assumption may be unwarranted.

Before any further conclusions can be drawn, the statistical significance of the observed difference between the calculated means of the two groups must be determined. Our "null" hypothesis is that there is no

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[40]Ibid.

statistical difference between the weighted means of
the reduced and nonreduced groups. This test was
conducted for the average foreign export prices of
the two groups as well as for the changes in volume
during the period. The results are shown in Table 8.[41]

The probability of the observed difference in
the means occurring by chance is so large that we must
accept the "null" hypothesis and conclude that no
significant difference has been demonstrated between
the behavior of the tariff-reduced group and that of
the non-reduced group. However, although the results
pertaining to the overall effect of the tariff conces-
sions on the prices and volume of imports are enlight-
ening, much information is lost due to the high degree
of aggregation. Therefore, we have constructed
various commodity groups by combining the individual
products into the major Schedule A commodity categories.
(Schedule A Nos. 3-9).

Of the six commodity categories studied, Metal
and Metal Products (including machinery and vehicles)
clearly dominated the total. Inadequate quantity
information for the variety of products in the Machinery
and Vehicles subgroup made it necessary to include the
remaining commodities with items in the Metals and

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[41]See Appendix A for a detailed description of the
test used.

TABLE 8.--Test of significance of observed difference between the means of the Tariff-Reduced Group and the Non-Reduced Group--All Commodities.

Observed Differences Between the Means		N	Standard Error of Difference		t-statistic		Probability of Observed Difference as Large or Larger Occurring by Chance (1.00=certainty)	
Q	P		Q	P	Q	P	Q	P
22.81	0.32	223	32.01	0.50	0.71	+0.64	0.48	0.52

Metal Products category. The few products which were available for analysis, however, accounted for the major portion of the value of commodities in the Machinery and Vehicles subgroup receiving concessions.

Concessions were granted on 159 classes of metals and manufactures other than machinery and vehicles involving 1960 imports of $170.0 million, or 12 per cent of dutiable imports in this commodity group. All of the concessions were reductions in duty except in four instances where existing duties covering $809,000 were bound at existing rates. About 60 per cent ($105.8 million) of total imports of the concession products were in the steel mill products subgroup. Concessions in other subgroups involved imports of $17.2 million of brass and bronze manufactures, $18.3 million of iron and steel making raw materials, $8.7 million of advanced manufactures of iron and steel, $7.2 million of jewelry and plated ware, and miscellaneous amounted to approximately $12.1 million.

By far the largest concessions granted during the 1960-61 negotiations pertained to machinery and vehicles, accounting for 48 per cent of total imports of all commodities on which agreement was reached at the Conference. These concessions included more than 140 classes of imports in which trade totaled $876.5 million. Duty reduction on automobiles and parts

covered $626.2 million, or 71 per cent of this trade.
The remaining concessions affected imports on various
types of machinery and apparatus amounting to $250.3
million in 1960. While these concessions were extended
to all contracting parties they primarily benefited the
European Economic Community which was a principal
supplier of these commodities in 1960.

Our sample consisted of 45 commodities which
underwent downward revisions in their tariff rates and
45 substitutes in consumption not receiving concessions.
This sample accounted for more than 51 per cent of the
combined total of concessions in both commodity categories.
Tariff rates experienced a decline of 24.21 per cent.
Since the duty level was already quite low when negoti-
ations began,[42] this reduction constituted only a 1.94
per cent decrease in the tariff as a per cent of the
foreign price. Prices of the reduced group rose on the
average by 11.99 per cent, in contrast to an increase of
11.75 per cent for their immediate substitutes. Thus,
tariff reductions were responsible for an increase in
the average foreign export price of (11.99-11.75)=0.24
per cent, and consumers benefited from an import price

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[42]The average ad valorem equivalent duty of our
sample was 8 per cent in 1960. This level conforms to
the estimates made by Balassa for 2-digit SITC groups
in the Metal and Metal Products category (op.cit.,
Table 1).

decline of (1.94-0.24)=1.70 per cent. These price changes were accompanied by an import volume increase of (32.81-16.79)=16.02 per cent.

Our results imply an import demand elasticity of -9.4, and an export supply elasticity of +66.7. Of the six categories, chemicals and related products underwent the largest decline in import prices reflecting a low import demand elasticity relative to export supply. On the other hand, import prices of non-metallic minerals declined by a modest 0.29 per cent as a result of a highly elastic import demand schedule. As expected, the quantity demanded of most of the commodity groups exhibited a higher degree of responsiveness to price changes than did "total imports."

A "T" test was performed on these groups in order to ascertain whether the observed differences between the sample groups for each commodity class were significant. The results are presented in Table 9.

The reduced groups of the Wood and Paper, Non-Metallic minerals, and Metal and Metal Products categories each experienced significant differences in their rate of growth from that of their control groups with respect to volume and prices. Chemicals and related products, while undergoing a significant change in price structure demonstrated that the estimated increase in the volume of the reduced group of

TABLE 9.--Test of significance of observed difference between the means of the tariff-reduced groups and the non-reduced groups--by commodity group.

Commodity Category	Observed Differences Between the Means		No. of Independent Observations	Standard Error of Difference		t-statistic	
	Q	P		Q	P	Q	P
Wood and Paper	28.74	1.96	24	13.43	0.99	2.14*	1.98*
Textile and Related Products	67.27	0.28	53	61.15	0.31	1.10	0.90
Non-Metallic Minerals	62.42	1.72	15	27.14	0.78	2.30*	2.21*
Metal and Metal Products	16.02	0.24	45	7.28	0.12	2.20*	1.99*
Chemicals	11.49	2.15	56	9.99	0.89	1.15	2.41*
Miscellaneous	14.24	3.59	30	12.95	2.74	1.10	1.31

*Values are statistically significant at the 5 per cent level.

11.49 per cent over that of the non-reduced group could have occurred by chance. For Textiles and Miscellaneous products we must accept the "null" hypothesis of no significant difference between the measured changes in volume and prices. It is interesting to note that Krause[43] also found a significant relationship between tariff changes and the volume of imports for Metal products, Paper, and Non-Metallic Minerals. However, for these relationships to be significant his time period had to span at least eight years (i.e., 1947-1954). On the other hand, we have only allowed five years to elapse. This suggests that over the course of several negotiations (1954, 1955 and 1960-61) "excess" tariff protection of these groups has gradually been eroded to the point where further reductions will allow substantial increases in import volume to occur. Furthermore, our results show that while "total" imports have not reacted significantly to the tariff reductions negotiated at the Dillon Round, certain categories of commodities have become "tariff-sensitive" as a result of continued downward revisions in tariff levels.

Added up over all commodity groups, United States imports increased by $340 million[44] between 1960 and

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[43]Lawrence B. Krause, "U.S. Imports, 1947-1958," Econometrica, April, 1962, Table IV, p. 232.

[44]United States statistics report import values f.o.b.

1965 as a result of tariff negotiations. The groups
in Table 10, each of which experienced an increase in
imports of $20 million or more, accounted for more than
90 per cent of the total increase.

Since it is often assumed that transport and
distribution costs are roughly equal to the foreign
price of imported commodities,[45] total United States
imports subject to concessions amounted to approximately
$3.0 billion domestic port value. Thus tariff reduc-
tions were responsible for an increase in U.S. imports
of $680 million (c.i.f.) during the five year period.

Kreinin found an annual increase of $200 million
(c.i.f.) as a result of the 1955 negotiations. The
difference in our results is not surprising when the
scope of the Dillon Round with regard to trade coverage
is compared to prior negotiations. The 1960-61
Conference dealt with approximately $3.0 billion in
imports (domestic port value) as contrasted with the
$1.7 billion in 1955.

Secondly, by 1960 a significant amount of excess
protection was eliminated by successive rounds of
tariff concessions. With this excess protection removed
one would expect the reductions granted in 1960-61 to be
somewhat more effective in increasing the volume of
imports.

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[45]See: D. Humphrey, American Imports, op.cit.

TABLE 10.--Commodity groups experiencing major increases in imports as a consequence of the Dillon Round.

Schedule A Commodity Code	Commodity Group Description	Increase in Imports ($ million)
3	Textile Fibers and Manufactures	65.5
5	Non-Metallic Minerals	60.6
6 and 7	Metals and Metal Products, Including Machinery and Vehicles	167.8
9	Miscellaneous Products	20.2
TOTAL		314.1

Source: See text.

CHAPTER VI

THE EFFECT OF THE DILLON ROUND

ON UNITED STATES EXPORTS

The results for United States exports on a
commodity basis are presented in Table 11 for each of
the three main trading areas granting concessions to
the United States during the 1960-61 negotiations.
For each area, the commodity groups were selected on
the basis of the trade coverage of the concessions
granted. On the whole, the U.S. was the recipient of
tariff concessions on $2,764.5 million worth of exports
in 1960.[46] We have chosen to study only those indus-
trial exports receiving tariff reductions totaling
$1,291.1 million, of which $1,040.0 million were
selected for our sample. Furthermore, care was taken
to assure that our sample proportions (i.e., the pro-
portion of U.S. exports to a destination to the sample
total) closely approximated those of the population.

Looking through the country equations we note that
the fit, as measured by $\bar{R}^2$, is generally good. The

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[46]This figure includes concessions on agricultural
products.

TABLE 11.--Summary of equations for U.S. exports by commodity and destination.
(1955-I--1965-IV)

Destination	U.K.				EEC				Canada	
Industry	Chem.	Text.	Mach.	Wood	Chem.	Mach.	Met.	Misc.	Met.	Wood
Constant	34.75	33.68	23.77	-45.84	54.17	25.03	27.67	23.41	33.23	17.11
IPIA	8.54	5.93	1.57	6.27	2.48	4.14	9.85	10.15	43.62	34.12
	(1.58)	(2.16)	(0.75)	(1.19)	(1.33)	(1.96)	(4.23)	(1.97)	(21.84)	(14.22)
Distributed lag weights										
(a) pr										
t	-0.81	-0.19	-1.35	-1.15	-6.08	-6.23	-0.30	-3.27	-2.97	-2.21
	(4.79)	(1.90)	(0.35)	(1.17)	(5.34)	(3.90)	(1.40)	(1.09)	(0.47)	(1.04)
t-1	-3.81	-5.81	-1.71	-0.41	-1.50	-1.34	-2.21	-1.65	-3.79	-3.93
	(1.40)	(5.93)	(0.43)	(0.60)	(1.61)	(1.62)	(0.74)	(1.02)	(1.22)	(2.07)
(b) p^c										
t	-1.50	-1.81	1.77	-2.92	-8.33	-4.52	-3.00	-12.80	-1.18	-2.63
	(0.53)	(0.57)	(0.75)	(1.93)	(3.41)	(1.73)	(2.33)	(3.91)	(0.92)	(1.03)
t-1	-1.00	-2.52	-5.71	-1.07	-2.78	-1.55	-2.09	-14.76	-1.54	-3.74
	(0.38)	(0.83)	(2.19)	(0.21)	(1.77)	(0.70)	(0.75)	(4.97)	(0.71)	(1.51)
Price elasticity	-0.69	-0.33	-0.19	-0.38	-0.79	-0.73	-0.17	-0.93	-0.23	-0.36
(c) Tariff										
t	-31.02	-1.46	-35.72	-6.03	-26.06	-39.31	-27.54	-16.14	-4.93	-5.77
	(16.89)	(3.87)	(20.47)	(2.54)	(9.60)	(14.03)	(40.61)	(7.87)	(4.12)	(4.45)
t-1	-16.40	-2.16	-57.70	-9.94	-15.29	-9.81	-26.55	-38.25	-2.81	-4.35
	(6.44)	(3.98)	(22.21)	(3.84)	(3.29)	(3.33)	(12.13)	(40.14)	(1.84)	(3.89)
t-2	-5.99	-2.14	-35.12	-7.93	-7.30	-8.87	-23.31	-32.87	-8.17	-3.65
	(2.01)	(-4.90)	(12.10)	(2.48)	(4.58)	(5.27)	(10.29)	(22.14)	(7.89)	(2.98)
Tariff elasticity	-2.34	-0.21	-3.10	-1.38	-1.79	-2.90	-1.41	-2.48	-0.39	-0.39
$\bar{R}^2$	.9256	.8410	.8539	.8015	.9301	.8445	.9023	.8291	.8020	.8862
Durbin-Watson Statistic	2.32	1.50	1.61	1.88	1.98	1.63	1.74	1.43	1.91	1.70
No. of observations	44	44	44	44	44	44	44	44	44	44

Durbin-Watson coefficients suggest no auto-correlation (at the five per cent level of significance) in our static equations.[47] The quarterly observations used extended over the period 1955-1965. The regression coefficients for industrial production (our income proxy) are invariably significant. For all commodity groups, except U.S. exports of textiles to the U.K., the "tariff" elasticity of demand is sizeable compared to the total relative price elasticity, suggesting that relative price changes and tariff changes of the same magnitude lead to unequal changes in U.S. exports. This may be due to the fact that foreign importers regard tariff changes as permanent, while changes in relative prices are often considered transitory.

In every instance the relative price elasticity of demand is below unity, while except for textile exports to Britain and wood and paper and metal exports to Canada, (which are statistically insignificant at the 5 per cent level) all tariff elasticities are greater than unity. Thus, it appears that while U.S. exports were tariff sensitive during the 1960-65 period, they were significantly less responsive to relative

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[47]If we apply simple least squares to obtain estimates of the parameters in a regression relationship when the random component is serially dependent, we shall still obtain unbiased estimates, but these estimates will not be "best" estimates, i.e., they will not be of minimum variance.

price changes. These results are consistent with those
of Branson who found that, in the aggregate, the demand
for U.S. exports is price-inelastic.[48] It should also
be noted that the same concessions were granted to the
main competitors of the United States in each market
under the most-favored-nation clause of GATT. Thus,
any volume or competitive gain was against domestic
producers in the granting country and not third-country
exporters.

A second degree polynominal was fitted to the data
for relative prices and tariff rates. Zero weights were
assigned before time t=o and after time t=(n-1), where
n is the length of the distributed lag. The optimal
value of n for each variable was determined by trying
alternative values. Accordingly, that value of n which
maximized $\bar{R}^2$ was chosen as the optimal length of lag.
The use of the Almon lag distribution technique revealed
that U.S. exports are affected by relative prices in
the current period and with a one-period lag, while the
effects of tariff changes were distributed over three
quarters. This may possibly reflect the effect of the
"staging" of the tariff reductions. Since foreign
importers may have adjusted their expectations to the

[48]William H. Branson, "A Disaggregated Model of the
U.S. Balance of Trade," Staff Economic Studies, Board of
Governors of the Federal Reserve System, February, 1968.

long-run import price, which presumably reflected the
full reduction in the tariff level, the complete
response of U.S. exports to duty reductions may have
been spread over a period long enough for the full
reduction to become effective.

Tariff reductions averaged 15.5 per cent in the
United Kingdom while 21.7 and 17.6 per cent reductions
were realized for the European Economic Community and
Canada respectively. Thus our results suggest that
the United States was able to eliminate approximately
two-thirds of the expected discriminatory effect of
the common external tariff of the EEC.[49]

Our empirical technique assumes that, in the long-
run, the export supply curves of the United States for
the several groups studied are perfectly elastic (i.e.,
increased demand can be satisfied at constant costs).
Houthaker and Magee[50] assert that their experimentation
suggested that supply elasticities in the long-run are
fairly high. While for many industrial nations the
share of exports to total production may be high, U.S.
exports occupy a relatively small share of domestic
production, making high elasticities of export supply

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[49]Internal Tariffs were lowered by 30 per cent during
the 1960-65 period.

[50]H.S. Houthaker and S.P. Magee, "Income and Price
Elasticities in World Trade," Review of Economics and
Statistics, May, 1969, footnote 1.

quite likely. Furthermore, the degree of elasticity of foreign demand will vary inversely with the share of imports from the U.S. to total consumption. Since the latter proportion can be expected to be high in the areas studied, a priori we can expect a high import demand elasticity relative to the elasticity of export supply. Thus, the tariff reduction would accrue to the domestic consumer in the form of lower import prices, rather than as higher per unit prices received by the U.S. exporter.

Of the five commodity categories studied, machinery and vehicles exports to the U.K. and the EEC were the most responsive to tariff changes, while the demand for U.S. textile exports to the United Kingdom exhibited a high degree of insensitivity to tariff reduction (the coefficient was found not to be significantly different from zero at the 5 per cent level of significance). Similarly, exports of metals and wood products to Canada do not seem to have been effected significantly by the reduction in duty level.

United States exports subject to tariff reduction underwent an average reduction in duty level of 20.6 per cent, constituting a 4.7 per cent decline in the tariff as a per cent of the American export price. These price reductions were followed by a 44.4 per cent increase in the volume of U.S. exports during 1960-1965.

Applying this percentage to the total value of industrial goods receiving concession (i.e., $1,291.1 million) suggests that as a direct result of duty reductions, U.S. exports increased by $573.2 million during the 1960-1965 period. (See Table 12.)

SUMMARY

The Effect of the Dillon Round on United States Trade

The Dillon Round of negotiations effected the unit values and volume of United States trade as shown in Table 13.

While a determination of the benefit accruing to the U.S. exporter and foreign consumer was not possible, we have determined that foreign export prices rose on the average of 0.32 per cent, while a 1.98 per cent reduction in import prices was passed on to the American consumer. United States exports of merchandise amounted to $19.4 billion in 1960. Thus, the increase in exports due to the Dillon Round was 2.9 per cent of total exports. Similarly, merchandise imports in the same year were $15.0 billion indicating an increase of 2.3 per cent of the total as a consequence of tariff negotiations. Therefore, it is estimated that the Dillon Round had a net favorable effect on the U.S.

TABLE 12.--The effect of tariff concessions on the volume of United States exports.

Destination	U.K.					EEC					Canada			TOTAL
Commodity Group	Chem.	Text.	Mach.	Wood	Total	Chem.	Mach.	Met.	Misc.	Total	Met.	Wood	Total	
Total Trade in 1960 (millions)	22.8	3.8	110.0	35.4	1,720	280.0	300.0	162.0	100.0	842	23.0	3.0	26	1,040.0
Percentage decline in tariff	20	21	13	20	15.5	25	20	21	19	21.7	15	37.5	17.6	20.6
Decline in Tariff as per cent of price	2.0	9.0	8.0	2.0	6.4	5.0	5.0	3.0	3.0	4.4	3.0	3.0	3.0	4.7
Tariff elasticity	-2.34	-0.21	-3.10	-1.38	-2.43	-1.79	-2.90	-1.41	-2.48	-2.15	-0.39	-0.39	-0.39	-2.11
Percentage Increase in Exports	46.8	4.4	40.3	27.6	37.8	44.8	58.0	29.6	47.1	46.8	5.9	14.6	6.9	44.4
Absolute Increase in Exports (millions)	10.7	0.2	44.3	9.8	65.0	125.3	174.0	48.0	47.1	394.4	1.4	0.4	1.8	461.2

TABLE 13.--Changes in United States industrial trade as a result of the 1960-61 negotiations.

Trade of the United States	Change in U.S. Price (per cent)	Change in Foreign Price (per cent)	Change in Volume (per cent)	Increase in volume of U.S. Trade ($ millions)
Exports	-1.98		+44.4	573.2
Imports		+0.32	+22.8	340.0
Balance of Trade				+233.2

Source: See text.

balance of trade of some $233.2 million. However, this net increase constituted little more than a five per cent increase in the trade balance in 1960 and is completely insignificant when compared to the 1960 gross national product.

CHAPTER VII

THE EFFECTS OF THE DILLON ROUND

ON THE DOMESTIC ECONOMY

Static Welfare[51] Effects

In Chapter V, it was pointed out that the increase

in United States trade as a result of the negotiations

was relatively insignificant when compared to overall

production of the American economy. The gain in economic

welfare brought about by this increase depends upon the

way in which resources are reallocated as a consequence

of tariff reductions.

The imposition of a tariff upon a commodity

involves a misallocation of productive resources.

Production of the protected commodity increases as

factors of production are diverted to it from more

efficient uses. The degree of this misallocation depends

upon the effective tariff rate (although these rates were

not used in estimating trade flows).

As the domestic price of the product increases,

consumption decreases as consumers switch to cheaper,

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[51]The word welfare as used throughout this thesis
denotes economic efficiency.

less desirable substitutes. The extent of this substitu-
tion depends upon the nominal tariff rate. The gains to
the economy come in the form of higher government revenues,
and an increase in the terms of trade. The latter is deter-
mined by the relative elasticities of import-demand and
export-supply. The total cost of protection can be obtained
by netting these three factors against each other. For the
country imposing the tariff, this cost may be positive or
negative depending on whether the gain in the terms of
trade offsets the loss in the volume of trade. For the
world as a whole, it involves a net loss, since the gain in
the terms of trade is offset by a comparable decline in the
terms of trade of the rest of the world. The loss in the
total volume of trade is not offset by any gain. In this
section we will focus upon the gain in welfare of the United
States, as well as the contribution to world welfare made
by the United States.

When measuring the gain the welfare from trade liber-
alization these factors operate in reverse. Our analysis
refers to a multi-product world which requires us to make
some simplifying assumptions. First, production of domes-
tically produced import-competing goods may disappear sub-
sequent to tariff reductions, while other products, made
more attractive as prices are lowered, will begin to be im-
ported. Second, complementarity and substitutability present
problems in estimating effective costs of protection. For the

sake of simplicity we will assume that all imported commodities, or their close domestic substitutes, continue to be produced after tariff reduction, and that on the average, the margin between the price of domestically produced goods and cost is no greater than for the imports which replace them.[52] Further, we will assume two-trading economies of equal size, namely the United States and all other GATT members combined.

From the point of view of economic welfare, the reduction in the cost of protection, and changes in the terms of trade resulting from trade liberalization, are relevant. Let us consider the case of a single homogeneous imported product, produced under constant costs abroad and increasing costs in the United States. It will also be assumed that domestic production does not cease as the tariff is reduced. Graphically, the situation can be depicted as in Figure 1.[53]

As a result of the tariff, the amounts produced and consumed domestically are OL and OM, respectively.

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[52]See H. G. Johnson, "The Cost of Protection and the Scientific Tariff," Journal of Political Economy, August, 1960, pp. 327-345.

[53]A similar procedure has been used by Balassa and Kreinin, "Trade Liberalization Under the 'Kennedy Round': The Static Affects," op.cit. p. 135.

Figure 1

Figure 1
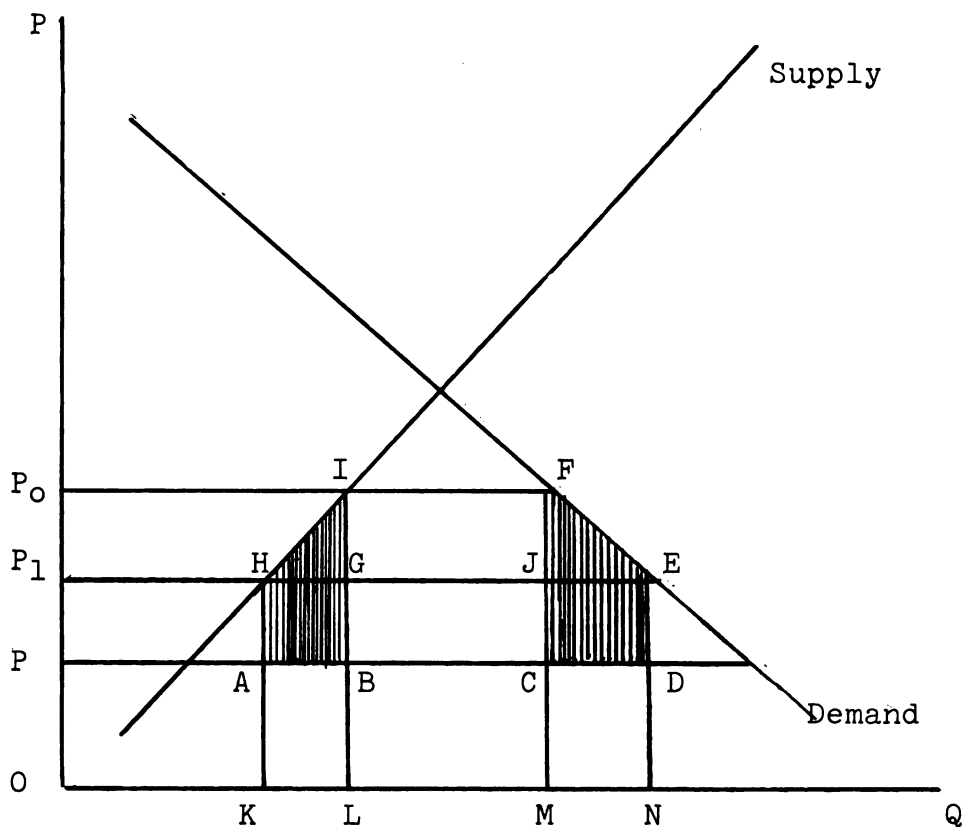
After the tariff is reduced there is an increase in
domestic consumption to ON and a decline in production
to OK. Imports increase from IF to HE. Employing
Marshallian concepts of consumer and producer surplus,
the reduction in duty has resulted in an increase of
consumer surplus equal to P_oP_1FE. Producer surplus and
government revenue decline by P_oP_1IH and IGFJ, respec-
tively. At the same time tariff revenue would increase
by the sum of ABGH and CDEJ, since the increase in

import volume will be subject to the new tariff. On balance, and assuming compensation between the three groups, the net increase in welfare can be represented by the sum of the two areas, AHIB and CFED.

In terms of the changes in the amount consumed (dC_i) and produced (dP_i), the welfare effect of the reduction in duty level on commodity i can be expressed as

$$\frac{1}{2} (IB + HA)dP_i + \frac{1}{2} (FC + ED)dC_i$$

$$= \frac{1}{2} (IB + HA)dM_i^* \qquad [1]$$

Under the assumptions made earlier, this formula can be made to apply to a multi-product world, so that the welfare gain due to trade liberalization can be approximated by

$$\sum_{i=1}^{n} \frac{1}{2} (IB + HA)dM_i \qquad [2]$$

IB represents the decline in the domestic price had the tariff been reduced to zero. If the full effect of the reduction had been realized in a fall in the import price this decline would be equal to $t_o/(1 + t_o)$.[54]

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*IB = FC, and HA = ED by construction.

[54]The _ad valorem_ rate was reduced from 9.7 per cent down to 7.4 per cent between 1960 and 1965.

This assumes an infinite elasticity of export supply. We have seen, however, that part of the tariff reduction was reflected in an increase in the export prices received by foreign exporters. With reference to Figure 1, the domestic price including the duty prior to negotiations is equal to $P_o = P_x (1 + t_o)$, where P_x is the foreign export price. If this duty is reduced to zero, the free trade price P is equal to the price received by the exporters. The percentage change in domestic prices can be expressed as $\dfrac{P_o - P}{P_o}$

$= \dfrac{P_x(1 + t_o) - P_x^1}{P_x(1 + t_o)}$, where P_x^1 is the new higher free

trade price of the commodity. Alternatively, this change can be written as $\dfrac{P_o - P}{P_o} = \dfrac{\%_\Delta P_x + t_o}{(1 + t_o)}$. Import

prices declined by 1.98 per cent, while export prices increased by 0.32 per cent. Assuming linearity, it can be expected that if tariffs were reduced to zero, export prices would rise by one-sixth the decline in import prices. Therefore, our formula becomes

$$\frac{P_o - P}{P_o} = \frac{-\dfrac{1}{6}\left[\dfrac{P_o - P}{P_o}\right] + t_o}{(1 + t_o)} = \frac{t_o}{\dfrac{7}{6} + t_o} \; .$$

Had tariffs been reduced to zero, the resulting percentage change in domestic prices would have been equal to 7.68 per cent. Therefore, the gain in welfare as a result of expanded import trade amounted to $\frac{1}{2}$ (7.68 + 5.70) x 340 = \$22.75 million.

These calculations must be modified to account for the change in the terms of trade as a result of increasing export prices in foreign countries. The change in the revenue paid by foreign exporters will depend upon existing elasticity conditions.

Prior to negotiations, the United States received an amount equal to the area ABCD in payment from foreign exporters (See Figure 2).

Figure 2

Foreign Sector
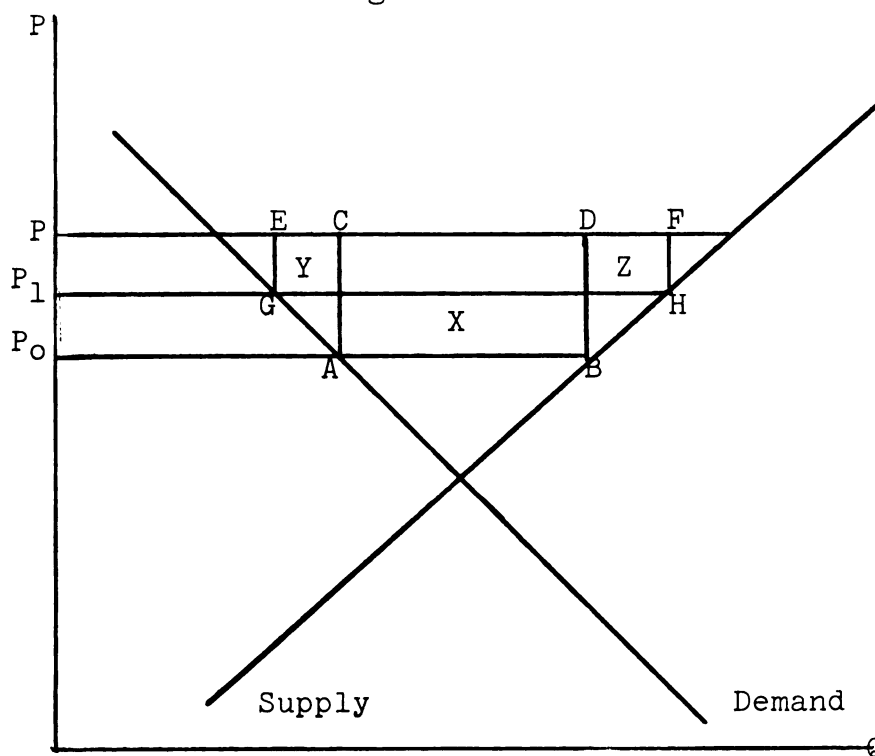
When the tariff is lowered, the new revenue obtained by the United States is equal to EFHG. The loss in revenue, area X, must be balanced against the gain (area Y + area Z).

Had tariffs been completely eliminated, the average foreign price would have risen by $\frac{1}{6} \left(\dfrac{t_o}{\frac{7}{6} + t_o} \right)$, or 1.28 per cent. Since prices actually increased by only 0.32 per cent, the loss in revenue is equal to 0.32 (1494.0)=\$4.78 million. This must be considered in light of a gain in revenue of 0.96(340)[55] =\$3.26, which yields a net loss of \$1.52 million. The net welfare effect as a result of the reduction in the tariff level of the United States is equal to a gain of \$21.23 million.

Since we have assumed constant costs in the United States export sector, the tariff reductions granted by the GATT nations to the U.S. accrued totally to foreign consumers. Therefore there is no additional welfare benefit to the United States as a result of the lowering of foreign tariff reductions.

An estimate may also be made of the total contribution to world welfare made possible by the Dillon

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[55]The tariff is levied on the foreign price exclusive of shipping costs.

Round.   Figure 3 represents the international market place.

P | Figure 3

P_o ... A

P_1 ... C

P

E_s

D

B

I_D

Q
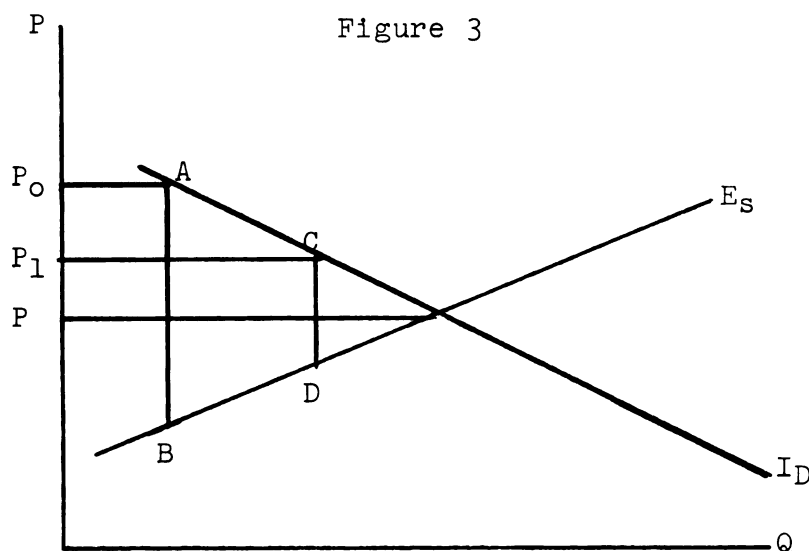
The intersection of the export supply and import demand functions determine the free trade equilibrium price. The imposition of a tariff causes a divergence between the value of the marginal unit to the foreign producer and its value to the domestic consumer.   Increasing trade by one unit will increase welfare by the amount of the duty.[56]   AB represents the original tariff t_o, while CD is the level existing after negotiations t_1. The total contribution of the United States to the change in world welfare can be represented by the area ABCD.   The import price declined by 1.98 per cent, while the foreign export price increased by 0.32 per cent.

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[56] J. E. Meade, The Theory of International Economic Policy, Vol. II, Trade and Welfare, p. 204.

These price changes were brought about by a reduction
in the _ad valorem_ rate from 9.7 to 7.4 per cent. The
change in welfare is equal to $\frac{1}{2}$ (9.7 x 7.4) x $680[57]
= $58.14 million.

In any comparison of the United States tariff
levels with those of the European Common Market and
of most other countries of the Free World, one factor
should be kept in mind: the United States _ad valorem_
duties are based on f.o.b. valuation of the imported
goods rather than on a c.i.f. basis. The United States
valuation is made on the foreign or export value,
whichever is the higher, and excludes such non-dutiable
charges as marine insurance, ocean freight and customs
fees, before being subject to duty at _ad valorem_ rates.

On the other hand, the major industrial countries
value their imports on c.i.f. cost, that is, the
valuation includes cost, ocean freight and insurance.
Since the inclusion of these costs has the effect of
making the valuation higher, the _ad valorem_ duty
applied on c.i.f. valuation as opposed to f.o.b.
valuation.[58] We will, therefore, consider the nominal
rate of duty to which American exports were subjected

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[57]Domestic port value exclusive of duty.

[58]Committee for Economic Development, "Comparative
Tariffs and Trade, the United States and the European
Economic Community," Supplementary Paper No. 14, Vol. I,
March, 1963, p. XIII.

prior to negotiations to be 11 per cent higher to adjust

for the difference in valuation procedure. Following

the same procedure as for the United States, the contri-

bution of the rest of the world to the change in world

welfare is equal to $\frac{1}{2}$ (25.30 + 20.60)$573.2 = $131.55

million. The increase in total world welfare is then

$189.69 million.

M. E. Kreinin[59] estimated the contribution to

world welfare by the United States to be $31.5 million

as a result of the 1955 negotiations. His result is

smaller than ours since the increase in imports as a

result of the Dillon Round was over three times that

of the 1955 negotiations. This difference apparently

more than offset the effects of differences in the

average tariff levels during the two periods.

In a more recent article M. E. Kreinin and

Bela Balassa[60] estimated the welfare effects anticipated

from the Kennedy Round of negotiations concluded in 1967.

These estimates were made under varying assumptions as

to the effects of tariff reductions on import and export

prices. Variant II estimates reflect welfare changes

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[59]M. E. Kreinin, "Effect of Tariff Changes on the Prices and Volume of Imports," American Economic Review, June, 1961, Vol. II, p. 321.

[60]M. E. Kreinin and B. Balassa, "Trade Liberaliza- tion Under the 'Kennedy Round': The Static Effects," The Review of Economics and Statistics, May, 1967, Vol. XLIX, pp. 125-137.

which do not entail changes in the terms of trade, while Variant I estimates take into account the possibility of rising export prices. For the United States the total gain in welfare is estimated to be $56 million under Variant I assumptions and $149 million under Variant II. For all industrial nations, these gains are $251 million and $326 million, respectively. One would expect larger gains from the Kennedy Round in light of the large across-the-board reductions (50 per cent in most cases), as opposed to only an average reduction of 23 per cent negotiatied at the 1960-61 Conference.

The Terms of Trade

The static argument in favor of tariffs at the national level is that under the appropriate circumstances a tariff will enable the country to obtain its imports cheaper. A country's terms of trade are improved, and its share in the gain from trade therefore increased, if import prices are lowered relative to its export prices.

In the partial-equilibrium case, Figure 4 shows the effect of a tariff in widening the spread between prices in the exporting and importing countries.

Figure 4
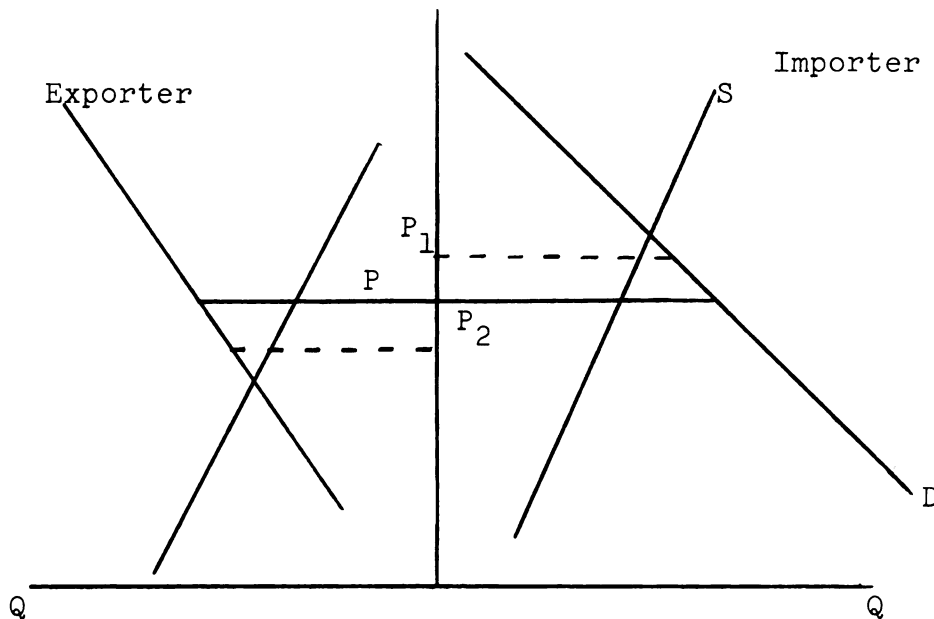
P is the price with trade, before the imposition of a
tariff, assuming no transportation costs. P_1 is the
price in the importing country, while P_2 is the price
in the exporting country after the tariff is imposed.
In this case, where the elasticities of demand and
supply are roughly the same in both countries, the
tariff will partly raise the price in the importing
country and partly lower the price in the exporting
nation. If the price in the exporting country is lowered
at all, however, the country imposing the tariff gets
the product cheaper. The extent to which a tariff can
improve the terms of trade depends upon existing
elasticity conditions. In the extreme case where the

production of a commodity takes place at constant costs abroad and increasing costs in the home country, the imposition of a tariff will not lower the price received by the exporters. On the other hand, if the demand for the product is relatively elastic when compared to the export supply curve, the effect on the foreign export price of a tariff may be quite severe. This means that the gain realized by the country imposing the tariff is at the expense of other countries; that is, the distribution of world income is altered in favor of the tariff-levying country.

When tariffs are lowered unilaterally the opposite effect occurs. In the absence of perfectly elastic supply curves, a reduction in the level of protection will be associated with a deterioration in the terms of trade of that nation vis à vis the rest of the world. The extent of this deterioration depends, for the most part, on the underlying elasticities of demand and supply in the country, or countries, receiving the concessions.

When multilateral tariff negotiations take place, the effect upon a country's terms of trade will depend upon; (a) the amount of protection it gives up in the form of concessions to other countries; (b) how successful it is in inducing other countries to lower their tariff barriers, and (c) the existing elasticities

of import demand and export supply. We will be concerned with the net barter terms of trade, more commonly called the commodity terms of trade, T_c. It affords a measure of how much imports a country will receive for its exports. It is the ratio of the price received for its exports to the price paid for imported goods. If $_oP_x$ and $_oP_m$[61] are the prices existing in the base period for exports and imports, respectively, and $_1P_x$ and $_1P_m$ are the export and import prices in period 1, the terms of trade can be expressed as

$$T_c = \frac{_1P_x/_oP_x}{_1P_m/_oP_m} \qquad [1]$$

It therefore measures the trend over time in the amount of foreign goods received in exchange for one physical unit of export goods.

Mathematically, we can find the percentage change in the terms of trade by differentiating the function $T_c = f(P_x, P_m)$, where T_c is the commodity terms of trade, and P_x and P_m are the prices of United States exports and imports, respectively. If $T_c = P_x/P_m$, then dT_c

$$= \frac{dP_x}{P_m} - \frac{P_x dP_m}{P_m^2} \text{, which equals } \frac{dP_x}{P_m} - \frac{T_c dP_m}{P_m} \text{, therefore,}$$

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[61] The relevant price for imports is the foreign price excluding tariffs.

$$\frac{dT_c}{T_c} = \frac{dP_x}{P_x} - \frac{dP_m}{P_m} . \qquad [2]$$

In words, the percentage change in the terms of trade of the United States is equal to the difference between the percentage change in the price received for its exports and the percentage change in the price paid for its imports.

The price paid for imported goods excluding tariffs can also be viewed as being the price received by foreign exporters for their exportables. Thus, the percentage change in terms of trade can be expressed as

$$\frac{dT_c}{T_c} = \frac{dP_x}{P_x} - \frac{dP_x^1}{P_x^1} , \qquad [3]$$

where P_x^1 is the average export price received by foreign exporters.

Our results suggest that as a direct consequence of the Dillon Round the United States terms of trade deteriorated by a modest 0.32 per cent. This estimate must be considered as setting an upper limit to the loss in the U.S. terms of trade since we have assumed no change in the prices received by U.S. exporters.

The relatively insignificant change in the terms of trade reflects in part our assumptions of an

infinitely elastic export supply curve for the United States. Exports occupy a very small share of total production in most American industries, which has the effect of making the U.S. export supply curve more elastic than for countries which are heavily engaged in production for export. Secondly, the high level of mobility of resources in the United States can also explain why an expansion in production can take place without a significant increase in costs.

The terms of trade of a nation must obviously take account of all the prices of all commodities which enter into international trade. We have only focused upon the industrial sector and as such have measured only a part of the whole effect of the negotiations on the overall terms of trade. It would, therefore, be more correct to say that our estimate shows the effect of the changes in the relative prices of industrial products upon the terms of trade. When the prices of agricultural products are taken into consideration, it is quite possible for changes in agricultural prices to offset any loss sustained as a result of negotiations on industrial goods. On balance, it appears that the Dillon Round had a neutral effect on the terms of trade of the United States.

The Employment Effect

We have already seen that the reduction of tariff barriers causes a reallocation of productive resources to more efficient uses. As tariffs are reduced multilaterally, there will be a shift in employment away from import-competing industries towards those industries producing for export. Our analysis now turns to the relationship between the expansion of foreign trade and its impact upon domestic employment.

In two related studies, the Bureau of Labor Statistics investigated the relationship between exports and imports and domestic employment.[62] In Employment in Relation to U.S. Imports, all 1960 imports ($17.6 billion c.i.f.) were divided into two categories: supporting imports and competitive imports. Of the competitive imports ($6.8 billion), all manufactured imports (divisions 19-39) account for a major portion, specifically ($6.3 billion).

For our purposes only the estimate pertaining to the second category is relevant. It shows the number of workers that would have been required to produce

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[62]U.S. Department of Labor, Bureau of Labor Statistics (BLS) Domestic Employment Attributable to U.S. Exports, 1960 and Employment in Relation to U.S. Imports, 1960, Washington, 1962 (mimeographed). See also U.S. Department of Labor, BLS, The Relationship Between Imports and Employment (An analysis of 27 import completing industries, and 2 industry case studies, Washington, April, 1962 (mimeographed)).

these imports in the United States. It consists of:
(a) direct employment, (b) indirect employment, and
(c) employment required to replace plant and equipment.
The BLS estimated that to produce all the competitive
imports would require 916.2 thousand workers both
directly and indirectly. At the same time 73.7
thousand would be necessary to replace plant and
equipment, and 83 thousand workers would be necessary
to handle transportation and distribution to the next
stage of production. The total is 1,072.9 thousand
workers yielding an arithmetic average of $(\dfrac{1,072,900}{\$6,808.6})$
= 157.6 workers per million dollars worth of com-
petitive imports.

On the other hand, the BLS study relating to
domestic employment and exports, shows that 3,081,700
workers were required to produce $22,055.3 million
worth of exports. These figures suggest an average
of 138.7 workers per $1 million of exports.

The above data refer to all trade, including
trade in agricultural products and thus cannot be
directly applied to the estimation of the effect of
the Dillon Round on employment. The two studies
present the direct and indirect effect on each industry,
but they do not show the effect on employment due to
output changes within each industry. Thus even though

for the direct impact the two figures are identical,

the indirect effect in each industry is not given.

M. E. Kreinin,[63] in a study of the effects of

an Atlantic Free Trade Association was able to overcome

this deficiency in the data. For each of some 200

industries, a 1960 employment matrix which shows the

number of jobs required directly and indirectly, to

produce $1 million of output in 1960, was used to

ascertain the indirect requirements of each of the six

major sectors (agriculture, mining, manufacturing,

transport, trade, and all others). By the use of

arithmetic averages, the BLS employment estimates

were aggregated into two-digit SIC divisions. In

Appendix IV-A for each two-digit SIC division, he

presents the job requirements per $1 million of final

demand in 1960. Since our results pertain to the major

Schedule A commodity groups, it was necessary to

aggregate his results into these major classifications.

Table 14 presents estimates of the employment changes

in each major commodity group (last two columns),

obtained by applying the BLS coefficients (first column)

to the estimated changes in trade as a consequence of

the Dillon Round.

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[63]M. E. Kreinin, Alternative Commercial Policies--
Their Effect on the American Economy, MSU International
Business and Economic Studies, Institute for International
Business and Economic Development Studies, Division of
Research, 1967.

TABLE 14.—Employment effects of the 1960-61 Tariff Conference (Schedule A groups) (1960 Jobs)

Commodity Group	Job Requirements per $1 million of final demand	Changes in Trade ($millions)		Changes in Employment (Jobs)	
		Imports*	Exports	Imports	Exports
Wood & Paper Products	395.43	13.85	20.69	5,476.71	8,181.45
Textiles & Manu-factures	322.93	52.74	5.01	17,031.33	1,617.88
Chemicals	111.06	31.93	194.12	3,545.04	21,558.97
Non-Metallic Minerals	87.55	56.05		4,907.18	
Machinery & Vehicles	285.88 230.74*	167.49*	338.97	38,646.64	96,904.74
Metal and Metal Products	175.60		12.29		2,158.12
Miscellaneous Products	103.49	17.95	2.12	1,599.96	219.40
Total		340.00	573.20	71,206.86	130,640.56

*Since for imports Machinery and Vehicles were combined with Metal and Metal Products an estimate of the job requirements was found by taking the arithmetic average of the two groups.

The net gain in employment, approximately 59
thousand jobs over a five year period, is insignificant
when compared to a total labor force of over 70 million
or even to the 17 million employed in the manufacturing
sector of the economy. Thus, it appears that the
multilateral reductions in tariff levels negotiated
at Geneva had a relatively insignificant effect upon
domestic employment.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

A review of the results of this investigation suggests that the Dillon Round had a very limited affect upon the American economy. Over a period of five years the concessions negotiated at Geneva were able to stimulate the foreign trade of the United States by only $913.2 million (imports plus exports) or by about two per cent of the total volume of trade in 1960. On balance the increase in industrial exports exceeded imports for a net favorable effect upon the balance of trade of $233.2 million, which is roughly equal to five per cent of the 1960 surplus on merchandise trade. From the point of view of economic welfare the United States benefited by a mere $21.23 million, while the total contribution to world welfare was estimated to have increased by $189.69 million. Again we find the size of these changes to be insignificant when compared to a gross national product in 1960 of over $600 billion. Large export supply elasticities prevented any significant change in the terms of trade as a result of negotiations. Over the period the United

States commodity terms of trade deteriorated at most
by less than one-half of one per cent. On the
employment side, 130 thousand jobs were created due
to the expansion of export industries, as compared to
an estimated net loss of 71 thousand jobs in import-
competing industries. Assuming perfect mobility between
the two sectors, roughly 59 thousand jobs were created
as a result of the Conference, a very small increment
in a total labor force of over 70 million.

Perhaps the single most important factor to which
this relatively minor impact can be attributed, is the
very philosophy under which the United States operated
its trade agreements program. From the day of its
inception in 1930, through 1962, trade agreements
legislation had incorporated two inconsistent goals,
namely the liberalizing of trade and the avoidance of
injury to domestic industry. A vivid example of how
these dual philosophies hampered meaningful negotiations
can best be presented with reference to the negotiations
with the European Economic Community and the United
Kingdom.

As a result of the normal process followed under
the existing trade agreements legislation of determining
offers on a highly selective basis, and an unprecedented
number of determinations under the "peril point"
provision of the legislation, the United States entered

the negotiations with offers that met only about 18

per cent of the requests made by the countries with

which it was negotiating.[64] Despite the fact that

negotiations with the EEC were of great importance,

the United States was able at the beginning of the

Conference to make offers on only 20 per cent of the

products on which the EEC had requested concessions.

The EEC offers, on the other hand, were for a reduction

across-the-board for industrial products with a limited

number of specific exclusions. The EEC had made it

clear that, although it would not require that its

offers be met dollar for dollar by the United States,

it did expect a reasonable showing of reciprocity.

Early in the negotiations it became apparent that U.S.

offers were inadequate to obtain the kind of agreement

the United States wanted with the EEC. In order,

therefore, to improve the negotiating position of the

United States, the President authorized the making of

supplemental offers on some products initially excluded

from the negotiations by Tariff Commission "peril

point" determinations. Products were chosen which

appeared to have bargaining potential and on which

reductions appeared to have minimal risk for U.S.

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[64]Department of State, General Agreement on
Tariffs and Trade, Analysis of United States Negotiations,
Volume I, p. viii.

industry. The concessions ultimately made from this
specially selected list added $76 million in tariff
reductions to the list of direct concessions to the
EEC, and $7 million in direct concessions to the United
Kingdom. Although the improved offers brought the
United States response to EEC requests to only 32 per
cent, and did not achieve an exact balance in the
trade coverage of the concessions, they made it possible
to reach an agreement in which the EEC maintained most
of the reductions of interest to the United States.
The very nature of the commodities selected to undergo
revisions in their tariff schedules ensured a minimal
effect upon the domestic economy. The expanded authority
of the Trade Expansion Act of 1958 was neutralized to a
great extent by the strengthening of such protectionist
provisions as the escape clause, peril point investiga-
tions, and the national security amendment.

To an economist interested in maximizing efficiency
through the increased specialization and subsequent
lower costs of production due to the reductions in
tariff barriers, the Dillon Round must surely be viewed
with disappointment. Peril-point investigations
precluded many items from collective bargaining. Only
when the inadequacy of United States' offers became
apparent did the President concede to make concessions
on commodities previously excluded by peril-point

determinations. These commodities, however, were
carefully selected to minimize injury to domestic
industries. On the other hand, legislators saw no
inconsistancy in these actions since they sought to
maximize not economic efficiency, but rather the
strength of the Western Alliance. This objective
was to be sought with as little harm as possible to
domestic industries engaged in international trade.

A major economic objective of the United States
during the 1960-61 Geneva Conference was the avoidance
of the discrimination against American products as a
result of the imposition of a Common External Tariff
by the six members of the Common Market. Since over
seventy-five per cent of the concessions received by
the United States were at rates equal to or below those
applicable before negotiations, it appears that the
United States was successful in limiting the discrim-
inatory effects resulting from the EEC bargaining as
a unit.[65] It is also apparent that had the United
States not adhered to a "no injury" policy, further
reductions in EEC discrimination may have been realized.

Over the past decade the United States has con-
sistantly run a deficit in its balance of payments,

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[65]Our results suggest that these reductions
constituted a decline in the CXT of approximately 21
per cent.

relying heavily on its strong current account to
minimize this imbalance. However, in recent years
concern has been growing over the trend in the rate
of growth of the surplus on merchandise trade. Since
this rate has declined in the face of an ever-growing
deficit in the capital account, the position of the
dollar as a key world currency has been threatened.
Our findings suggest that the Dillon Round was
unsuccessful in slowing the pace of the decline in
the balance on goods and services. United States
reliance upon multilateral tariff reduction as a
meaningful measure for restoring a balance in its
external trade position would be a serious misin-
terpretation of the usefulness of such negotiations.

Tariff reductions have been advocated as a means
of combatting inflation of the cost-push variety.[66]
The increase in imported goods would break bottlenecks
and check excessive price increases, so that prices of
particular goods in short supply would be slower to
rise when the economy as a whole was not operating at
capacity. The data suggest the inability of tariff
concessions of the magnitude negotiated at Geneva in
1960-61 to curb general cost-push inflation. First,

[66]A. Rees, "Price Level Stability and Economic
Policy," The Relationship of Prices to Economic Stability
and Growth, Compendium prepared for the Joint Economic
Committee, Washington, 1958, pp. 651-69.

the concessions were very small in relation to price,

and secondly a portion of these reductions accrue to

foreign exporters rather than to domestic consumers.

A major reversal in U.S. tariff policy came with

the passage of the Trade Expansion Act of 1962. Here,

for the first time, Congress recognized the role of

tariff reduction as a means of improving economic

efficiency. Tariff relief ceased to be the only avenue

of relief to an industry claiming injury as a result

of lowered rates of protection. The government was

empowered to extend to the industry trade adjustment

assistance in the form of grants, low interest loans

and technological information to aid in the shift to

other lines of production. Further, readjustment

allowances providing as much as 65 per cent of an

individual's average weekly wage for up to 52 weeks,

were made available to workers displaced as a result

of increased import trade. These workers could also

be provided with financial aid to relocate to a

different place in the United States. Thus U.S.

legislative policy became consistent with the

philosophy of multilateral tariff reduction.

Under the five-year act the President was permitted

to cut duties by up to 50 per cent of their July, 1962

level, to remove duties that did not exceed 5 per cent

on that date, and to eliminate duties on commodities

for which the United States and the EEC together account
for at least 80 per cent of total world exports.
Tariffs on temperate and tropical zone commodities were
also subject to removal. Tariff negotiations were to
be conducted on broad categories rather than on a
commodity by commodity basis.

A major departure from previous legislation was
that the Tariff Commission was no longer required to
make individual peril point decisions. A broad
definition of the industry was encouraged in order to
make it more difficult for an industry to claim injury.
Whenever the Tariff Commission would find, upon
investigation, that an industry had been injured it
could recommend direct assistance.

Under the auspices of the Trade Expansion Act of
1962 the United States negotiated concessions with
interested GATT members in the "Kennedy Round." This
round of negotiations could serve as an excellent
control group for our study in determining if these
broader powers and the new philosophy enabled trade
negotiations to become a significant factor operating
upon the American economy. Unfortunately, adequate
data is not yet available for such a determination.
However, Bela Balassa and Mordechai E. Kreinin,
operating under strict assumptions, have attempted to
estimate the effects of the Kennedy Round upon the

United States as well as the other main trading blocks of the Free World.[67]

Under the assumption that as a result of a 50 per cent reduction across-the-board in manufactured goods export prices in Western Europe would rise by one-third of the tariff reduction (Variant I), and the alternate assumption of unchanged European prices (Variant II), estimates were made of the impact of the Kennedy Round upon U.S. trade. Using 1960 as a base, as a direct consequence of the negotiations they find an expansion in the export trade of the United States to be \$833 million. With the removal of one-half of the discrimination of the EEC and EFTA U.S. trade would benefit from a further increase of \$195 million. The indirect effects contributed \$118 million to this estimate bringing the total increase in U.S. exports to \$1,146 million for both Variant I and Variant II. On the import side the direct effects are estimated to be \$1,008 million and \$1,130 million for Variant I and Variant II respectively. A comparison of these estimates with our results indicates that the Kennedy Round may be as much as three times as effective an increasing the imports and exports of

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[67]B. Balassa and M. E. Kreinin, "Trade Liberalization Under the 'Kennedy Round': The Static Effects," op.cit.

the United States as was the Dillon Round. An exam-
ination of the expected effect of the Kennedy Round
upon the U.S. trade balance shows a net increase in
the trade surplus of $138 million under Variant I as
compared to a $16 million increase under Variant II
assumptions.

Using a technique similar to ours, an estimate
was made of the potential gain in welfare attributable
to the reductions in 1962 tariff levels. When European
prices remained unchanged the net increase in U.S.
welfare was estimated to be $149 million as compared
to only $56 million when these prices were assumed to
rise by one-third of the tariff reduction.

We have found that on the average foreign prices
rose by little more than 12 per cent of the tariff
reductions negotiated during the 1960-61 Conference.
These results imply larger export supply elasticities
than those anticipated in the Kennedy Round study. Thus
the actual magnitude of the effects of the Kennedy Round
may lie nearer to the estimates found under the Variant
II assumption of unchanged foreign prices. Although
the impact of the 1965-67 negotiations is expected to
be significantly greater than the 1960-61 Conference,
the results are still insignificant when compared to
the size of the U.S. economy. For instance, the
expansion of exports and imports as percentages of

gross domestic product is estimated to be only 0.3 per cent, as compared to our estimate of less than 0.2 per cent. At most the increase in the surplus on merchandise trade represents only a change of about 5 per cent of the surplus existing in 1960.

It must be emphasized that the estimates arrived at by Kreinin and Balassa set an upper limit to the effectiveness of the Kennedy Round. The actual cut on industrial tariffs may very well lie below the hoped-for 50 per cent across-the-board reduction. In this case their estimates would have to be revised downward, bringing them closer to the results obtained in our investigation.

It appears that future negotiations may be significantly more effective in stimulating the trade of the United States. For the most part industrial tariff rates are already at low levels, so that further reductions may substantially effect industrial imports. The Dillon Round, as we have seen, was successful in reducing the discrimination of the common external tariff of the EEC. The Kennedy Round is expected to reduce the level of this common tariff wall still further, which will enhance the position of U.S. exports to Western Europe.

We have dealt exclusively with the reduction of tariff rates as a stimulus to trade between nations.

Non-tariff barriers in the form of quotas and valuation
procedures such as the American Selling price method,[68]
are very severe impediments to international trade.
These and other protectionist policies should also be
included in future negotiations in keeping with the
new philosophy of the Trade Expansion Act of 1962.

Even complete removal of tariff barriers by all
the major GATT members may have an insignificant effect
upon the United States, since the foreign trade sector
occupies such a small fraction of the total economy.
However, for those countries heavily dependent upon
international trade, the further liberalization of
trade through meaningful negotiations will be a strong
stimulus for increased efficiency as well as a binding
agent for the Western Alliance.

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[68]For purposes of valuation, the ad valorem duty is
applied to the price of a domestically produced import-
competing product. This procedure is currently being
used for imports of coal-tar products, canned clams,
rubber-soles, fabric upper footwear, and wool-knit gloves
and mittens.

APPENDIX A

APPENDIX A

Our empirical procedure poses a difficult problem
when attempting to test for the significance of the
differences between our sample means. In all cases our
"null" hypothesis is that there exists no statistical
difference between the means of the reduced group and
its non-reduced counterpart. However, we are dealing
with two samples which, by the nature of our statistical
design, are inherently paired. That is, changes in one
group may systematically effect changes in the other.
For example, as pointed out in Chapter IV, as a result
of the reduced prices of the tariff-reduced group,
prices in the non-reduced category may not have risen
by as much as they would have in the absence of tariff
reduction. Furthermore, volume growth of non-reduced
imports may have been retarded as a result of the
increased demand for its close substitutes. Thus, we
are dealing with non-independent samples.[*]

In order to test the significance of the difference
between the means of our two samples, we obtained the

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[*]A technique developed to deal with the problem of
dependence, is described in F. E. Croxton and D. J.
Cowden, Applied General Statistics Prentice-Hall Second
Edition, pp. 654-657.

difference D between each pair of values, determined the value of the average of these differences $\overline{X}_D$ differed significantly from zero. The "null" hypothesis was that $\overline{X}_D$ is the mean of a random sample from a population of differences having a mean of zero. The standard error of the difference between the two sample means is given by

$$\sigma_{\overline{x}1 \, - \, \overline{x}2} = \sigma_{\overline{x}_D} = \sqrt{\frac{N \, \sum (x_1 - x_2)^2}{(N-1)} - \frac{[(\, \sum (x_1 - x_2)]^2}{(N-1)}}.$$

Then, t $= \dfrac{\overline{X}_D - 0}{\sigma_{\overline{x}_D}}$ where X_D is assumed to be a normally

and independently distributed random variable. Furthermore we will assume that there are no systematic influences on the X's.

The possible consequences of employing a method which assumes independence of the two samples when they are not, in fact, independent may be clarified by writing $\sigma_{\overline{x}_D}$ in its alternative form, $\sigma_{\overline{x}1 \, - \, \overline{x}2}$

$= \sqrt{\sigma_{x1}^2 + \sigma_{x2}^2 - 2r \, \sigma_{x1} \cdot \sigma_{x2}}$ where r is the correlation

between the two samples. If the shorter form, $\sigma_{\overline{x}1 \, - \, \overline{x}2}$

$= \sqrt{\sigma_{\overline{x}1}^2 + \sigma_{\overline{x}2}^2}$, which assumes independence, is used,

the value of $\sigma_{\overline{x}1 \, - \, \overline{x}2}$ will be too large when there is a positive correlation between the two sets and too small when negative correlation is present. Ignoring the lack

of independence may cause us to fail to declare a
significant difference when r is positive, and to
erroneously declare a difference to be significant when
r is negative. We have reason to expect that, since
our sample groups have been selected on the basis of
their substitutability, the correlation between the
quantitites of the reduced and non-reduced group as
well as the correlation between the prices of these
groups is negative. Therefore, had we failed to
recognize the dependence between our sample group we
may have concluded that certain of our reduced groups
experienced significantly different rates of growth
than their counterparts, even though the observed
difference could have occurred by chance.

APPENDIX B

STATISTICAL

IMPORTS, EXPORTS AND

RELATED SERIES

APPENDIX B

SOURCES OF DATA

The following sources were used for the series indicated:

Industrial Production Index: Series of industrial production for all countries can be obtained from various issues of Main Economic Indicators, OECD.

United States' Export Trade Data: Value data is presented by commodity and destination in various issues of United States Exports of Domestic and Foreign Merchandise, U.S. Department of Commerce, Report No. FT. 420.

Price Data: For Canada, wholesale price indices by commodity group were obtained from the Statistical Summary, Bank of Canada, and the Statistical Review, Minister of Trade and Commerce. The Board of Trade Journal, Her Majesty's Stationery office, contains wholesale price indices of manufactures, by commodity group, for the United Kingdom. United States' wholesale price indices are presented on a commodity group basis in various issues of the Statistical Abstract of the United States, U.S. Department of Commerce. Price

indices for the European Economic Community were con-
structed by aggregating country indices weighted by
total U.S. exports. Wholesale price indices by com-
modity groupings for Germany were taken from Wirtschaft
und Statistik, Weisbaden, Statistisches Bundesamts. The
Bollettino Mensile di Statica, Instituto Centrale di
Statistica reports Italian wholesale price indices on a
commodity group basis. French wholesale price indices
were obtained from the Bulletin Mensuel de Statistique,
Paris, Institut National de la Statistique et des
Études Économiques. Wholesale prices of Belgium com-
modities were obtained from the Bulletin d' information
et de Documentation Department des Etudes, Banque
National de Belgiuque.

Tariff Rates: The tariff rates which prevailed
before and after the negotiations for the United States
as well as for the other contracting parties are
presented in Analysis of United States Negotiations,
Department of State, Vol. I, March 1962.

United States Imports: For 1960 and 1965, value
data are available from Report No. FT. 110, U.S. Imports
of Merchandise for Consumption, and FT. 246, U.S. Imports
for Consumption and General Imports, U.S. Department of
Commerce, Bureau of the Census.

TABLE B.1.--Wool and paper: printed matter (reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity		Tariff (per cent of foreign price)	
	1960	1965	1960	1965	1960	1965
4075000	1,435.1	2,474.9	150.7	132.6	4.0	2.0
4209650	16,656.6	24,459.9	463,637.9	817,401.0	10.0	8.0
4221500	4,224.4	3,474.4	12,156.7	9,050.5	25.0	20.0
4740150	280.3	345.6	4,356.1	5,238.4	6.0	4.0
4799430	34.1	124.6	67.1	137.2	12.5	10.0
4728300	81.4	265.6	24.0	302.0	12.6	10.2
4729300	105.1	34.3	143.6	21.4	8.2	6.8
4729950	30.5	225.2	105.5	1,739.4	16.5	13.0
4717500	68.4	37.3	192.7	54.7	17.8	15.0
9521100	105.4	196.9	89.6	118.4	13.6	11.0
4799470	26.3	45.6	67.0	94.0	7.8	6.2
9530800	103.4	76.2	71.1	100.1	13.5	10.8
4724500	19.1	56.9	32.9	121.8	5.7	4.5
4724620	63.2	155.3	134.5	423.7	14.0	12.0
4724560	257.2	541.3	451.4	759.4	5.7	6.8
4790000	17.0	4.5	51.4	14.7	15.0	12.0
4730300	163.0	452.6	2,700.5	5,394.2	7.5	5.5
4799605	249.4	504.6	244.7	321.2	12.5	10.0
4302000	16.4	324.0	5.5	303.4	17.8	14.2
4321100	87.5	135.6	177.0	441.0	25.0	20.0
4717400	16.3	37.5	24.6	66.1	14.0	11.2
4726100	575.8	335.4	826.9	1,741.4	15.5	12.4
4724420	3.9	1.1	7.2	1.7	11.6	9.3
4752200	1,173.0	1,160.0	3,124.6	2,837.4	19.0	15.0

TABLE B.2.--Textile fibers and manufactures (reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity		Tariff (per cent of foreign price)	
	1960	1965	1960	1965	1960	1965
3030000	90.7	313.8	36.4	115.0	20.0	16.0
3071910	50.4	1,330.5	40.1	2,350.3	12.5	11.0
3091410	68.9	951.4	115.4	41.2	30.0	25.0
3081420	6.3	17.3	3.6	23.7	30.0	20.0
3224200	212.1	4.8	126.8	6.9	20.0	16.0
3224300	1,047.0	1,100.3	770.7	668.1	9.1	7.0
3224500	21.4	14.0	18.4	730.4	17.5	14.0
3086300	110.1	253.5	60.0	164.1	28.7	24.9
3261000	9.3	1.4	24.1	2.4	2.8	1.3
3262400	317.8	394.4	1,267.8	1,948.3	3.3	1.1
3263500	35.8	18.6	148.6	225.6	3.8	3.1
3390010	434.2	635.4	1,240.2	2,617.7	10.0	8.0
3270200	1,066.4	2,476.5	1,108.7	2,330.7	25.0	20.0
3270600	240.6	1,072.7	246.6	631.4	15.0	12.0
3286000	138.6	426.2	160.3	484.9	12.5	10.0
3275000	1,966.9	1,375.1	1,012.9	929.0	8.5	6.5
3352130	29.8	5.7	147.1	11.5	30.0	27.5
3250700	669.1	942.3	3,702.0	4,083.6	35.0	28.0
3291000	775.4	646.0	4,335.1	274.6	9.5	6.0
3291500	1,331.3	566.1	5,064.2	3,007.2	33.6	27.6
3291600	585.6	264.9	4,767.7	402.4	23.0	18.0
3535050	2,939.1	5,494.3	2,224.6	3,288.4	6.0	4.0
3535400	2.4	3.0	0.2	0.6	1.2	1.0
3573000	987.2	1,818.1	137.1	335.2	19.2	16.7
3561000	24.5	651.7	32.6	573.4	25.5	20.0
3615900	613.4	1,351.0	181.0	293.9	28.2	24.7
3705010	12.8	100.0	3.2	69.3	21.0	17.0
3705390	53.4	13.9	26.1	4.2	21.0	17.0
3706200	107.1	121.7	41.6	24.9	25.5	20.0
3727000	216.7	224.5	38.6	40.8	21.0	17.0
3729000	32.9	8.9	1.9	0.9	21.0	17.0
3737000	13.4	30.4	10.0	35.3	30.0	24.0
3737200	3.5	27.0	13.7	46.8	30.0	24.0
3743100	6.7	2,093.5	23.4	5,017.2	50.0	40.0
3743400	15.7	32.7	8.5	56.4	25.0	20.0
3800090	1,075.4	1,387.4	601.5	901.0	50.0	40.0
3880000	139.8	261.5	32.6	77.8	31.5	26.5
3902550	1,430.3	1,088.3	223,725.0	182,148.2	6.0	4.0
3912100	1,278.3	1,385.6	340.1	339.1	18.8	15.1
3912700	388.8	551.4	393.2	343.1	15.0	12.0
3913100	860.8	215.1	132.6	28.6	13.5	10.6
3925000	14.5	43.0	2.1	3.5	43.1	34.7
3925400	444.2	153.6	57.2	20.5	50.8	40.6
3166300	16.7	5.3	75.3	26.8	50.0	40.0
3750310	369.1	505.3	22.0	20.1	30.0	24.0
3854510	77.3	151.7	15.7	52.3	30.0	24.0
3295000	2.1	0.7	0.4	0.2	45.0	36.0
3750390	1.1	1.3	0.2	0.1	38.0	30.0
3168100	1,327.6	1,366.9	153.3	110.3	35.0	28.0
3851400	250.8	625.4	1,522.8	2,161.2	28.7	23.1
3690000	193.0	3,315.2	45.6	283.9	10.0	8.0
3698700	36.6	382.9	42.9	397.3	10.0	8.0

TABLE B.3.--Non-metallic minerals (reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity		Tariff (per cent of foreign price)	
	1960	1965	1960	1965	1960	1965
5390450	671.1	847.0	3,078.0	3,937.0	5.0	3.0
5390970	9.1	578.6	14.3	2,537.2	30.0	24.0
5110300	249.7	977.0	101,4--.5	695.0	13.9	11.1
5463100	6.3	33.5	542.7	3,15-.5	11.0	8.0
5464200	103.0	127.3	7,930.0	7,060.8	21.3	17.5
5300000	2,461.0	3,757.9	113.7	81.9	4.0	3.1
5594000	49.2	17.9	70.4	19.5	21.0	17.0
5510000	54.3	59.4	10,493.7	3,710.0	15.0	12.5
5713000	8.4	4.1	147.9	67.0	8.1	1.3
5730100	1,301.1	1,695.0	94,529.4	103,067.3	2.5	0.5
5730600	36.6	19.2	242.5	174.6	7.5	5.5
5260270	374.1	229.3	5,262.5	3,231.4	7.1	5.7
5109300	519.0	790.5	102.9	166.2	1.6	0.1
5110060	8.1	5.7	4.5	4.6	4.9	1.3
5951000	78,036.9	131,827.9	801.9	1,258.7	10.0	8.0

TABLE B.4.--Metals and metal products (reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity		Tariff (per cent of foreign price)	
	1960	1965	1960	1965	1960	1965
6301500	2,172.3	5,???.4	113.5	216.0	4.4	2.4
6003200	3,???.3	??,???.?	?6.?	7?7.5	1.0	0.6
6212100	1??.0	373.4	4??.?	1,76?.9	9.2	6.9
6250050	21.6	??6.?	??.?	67.3	19.2	15.4
6225200	532.3	?60.?	5,17?.6	3,674.6	12.5	10.0
6214100	5,637.6	1?,3?1.3	??,17?.9	66,8?9.4	10.5	8.5
6250350	41.5	11.5	16?.1	33.9	12.5	10.0
6250590	15.3	27.6	1?.6	28.2	17.5	15.0
6250600	63.0	8?.0	3.1	9.7	12.5	10.0
6250610	6?.9	1.5	?.0	0.1	12.5	10.0
6250655	23.0	?3.?	1.?	1.6	12.5	10.0
6057200	8?2.8	??6.?	1?,?41.1	6,0?7.?	10.0	8.0
6081300	?94.?	3,74?.?	1?,???.?	7?,6?6.?	3.4	2.0
6111800	1?7.2	5,??0.?	?,???.?	3?,??1.?	10.0	9.5
6110500	3,0?6.3	4,4??.7	4?,1??.0	6?,777.?	1.4	0.7
60?6100	2?7.4	2?,?04.7	?,???.0	6??,411.6	3.1	2.5
6030400	5.9	9.1	11?.?	237.3	5.0	4.0
6113500	275.0	?0?.9	2,??1.9	5,9?0.1	5.0	4.0
6150500	5.3	9.1	114.?	?37.3	5.0	4.0
6113200	2,168.8	445.8	19,4?3.6	3,8?6.3	5.0	3.0
6113400	50.3	63.0	26?.9	303.9	10.8	8.0
6092600	110.6	177.1	906.8	3,16?.7	12.5	10.0
6092700	15.5	5.6	30.9	36.3	15.0	12.0
6112400	?34.3	19?.?	8?7.0	401.7	8.9	7.1
6112600	3?0.0	1,7?1.?	???.4	6,21?.?	4.6	2.7
6200530	7?3.5	1,4?6.?	1,4?7.0	2,?0?.?	1?.0	12.0
6150000	337.0	576.7	??0.7	16?.9	10.0	8.0
6790350	24.6	29?.?	31.1	7?0.?	?0.0	16.0
6120000	4.8	0.?	4?7.1	25.9	87.5	50.0
6120020	0.2	0.?	5.3	13.2	75.0	50.0
6120030	31.1	37.?	3?3.7	415.9	8?.6	50.0
6118200	329.4	3?1.?	7?0.4	570.?	35.9	18.1
6118600	?1.3	0.4	309.0	3.0	50.0	40.0
6150310	114.6	4?.?	45.9	10.3	5.5	3.3
6200740	1?9.4	?3?.?	1?1.1	?94.3	23.8	20.2
6200750	76.7	??8.?	?1.9	93.4	20.7	17.2
6200780	25.2	145.9	4.7	27.3	24.0	19.2
6200790	2.6	5.7	0.4	0.2	17.8	14.3
6200800	151.4	51.0	12.0	16.1	22.7	18.1
6790500	467.9	8?1.0	557.7	749.9	12.5	10.0
6544300	18.4	219.0	20.8	98.3	12.5	10.0
6544310	299.1	113.1	210.2	51.5	17.5	14.0
6458700	36.7	14.7	30.6	4.9	12.5	10.0
6790970	1,386.8	2,881.0	2,422.6	4,189.3	22.5	18.0
7900500	513,659.1	740,0?6.3	444.6	559.4	8.5	6.5

TABLE B.5.--Chemicals and related products (reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity		Tariff (per cent of foreign price)	
	1960	1965	1960	1965	1960	1965
8231230	4,362.2	4,012.6	20,200.9	12,125.1	26.8	21.4
1260780	1,669.3	444.1	1,965.5	670.8	20.0	16.0
8245900	130.7	165.4	329.6	582.5	10.5	8.5
8247500	282.7	177.3	11,557.3	6,010.1	10.5	9.5
8312900	94.3	133.9	6,071.8	7,198.4	10.5	8.5
8380110	8.4	10.7	307.5	311.9	12.6	10.0
8380170	593.4	765.3	6,170.3	6,699.9	10.5	8.5
8380210	99.5	214.6	925.5	279.8	27.3	21.8
8380937	285.3	305.0	835.6	1,862.8	39.1	31.0
8310200	104.9	80.9	2,279.2	1,838.9	6.0	5.0
8380300	57.6	164.4	1,959.2	4,501.5	8.5	6.5
8380982	265.0	198.4	1.7	34.7	12.5	10.0
8050100	70.0	43.0	89.0	22.1	50.1	40.1
2220470	1,985.9	399.2	661.3	555.5	5.0	3.0
2220030	81.6	303.1	244.4	604.7	4.8	3.3
2346000	1,389.1	2,681.7	17,499.6	30,059.9	6.0	4.0
2345800	229.7	196.2	6,395.1	1,514.9	7.5	5.5
0097000	1,071.5	657.5	3,464.7	2,099.7	16.5	13.2
9850400	70.0	170.3	72.4	153.7	7.5	5.5
8050200	10,523.0	3,703.9	3,593.2	1,065.9	40.0	32.0
8070830	138.5	670.8	9.0	46.5	21.0	17.0
8070900	11,793.1	1,504.7	2,445.4	469.7	26.0	21.0
8261000	1,520.2	1,010.6	1,459.2	946.9	3.8	1.4
2278000	740.5	1,195.9	54.4	82.2	10.0	8.0
2290360	27.3	144.2	20.4	88.8	6.3	4.0
2290410	706.6	1,084.2	55.5	127.7	5.0	3.0
8722350	134.3	172.3	20.6	31.5	20.0	16.0
2290890	2,095.6	3,436.6	1,560.4	2,151.1	6.3	4.0
2206000	2,862.5	2,847.1	417.5	624.2	157.0	125.9
8722000	18.5	141.1	0.5	1.1	10.8	8.0
8722150	67.8	103.0	33.2	68.6	45.0	36.0
8725700	162.4	25.5	35.3	19.4	18.8	15.0
8731100	327.8	312.2	40.6	92.3	22.3	17.8
8431100	452.9	554.4	121.4	273.3	11.5	9.5
8402200	14.2	24.9	239.7	532.4	21.0	17.0
8420270	340.8	95.0	56.9	23.2	11.0	9.0
8431900	229.4	236.9	583.7	1,052.1	10.5	8.5
8420130	142.1	716.9	603.3	2,936.9	12.5	10.0
8325000	136.7	193.6	1,331.4	1,943.3	5.0	2.0
8330400	202.4	405.3	671.4	1,294.6	9.7	7.4
8712500	623.8	1,634.1	899.6	2,523.4	8.5	6.5
8336000	61.9	242.6	2.7	11.1	5.7	2.2
8340000	107.4	190.6	975.9	1,478.1	6.7	5.0
8341000	0.1	1.4	1.0	22.0	56.3	45.0
8350120	17.3	27.0	210.0	309.0	11.1	8.9
8350390	36.3	223.3	862.7	3,843.1	7.5	6.0
8380620	5.9	43.2	34.4	359.2	36.6	30.0
8380872	38.7	15.5	9.1	11.0	21.0	17.0
8380570	1.0	232.0	2.4	505.7	43.0	34.2
8130870	62.5	228.4	29.6	119.2	15.0	12.0
8380915	7.8	39.7	29.4	183.9	35.0	28.0
8020200	3,325.1	2,442.8	2,925.4	2,945.3	28.5	22.8
8040150	14.9	51.2	7.0	183.2	22.9	18.3
8040760	422.5	784.7	519.1	1,543.0	25.3	20.2
8380350	82.9	30.1	204.6	78.0	6.3	3.8
8040755	469.1	19.5	3,863.4	123.6	47.5	38.0

TABLE B.6.--Miscellaneous (Reduced Group).

Schedule A. No.	Value (thousands of dollars)		Quantity		Tariff (per cent of foreign price)	
	1960	1965	1960	1965	1960	1965
9160560	291.4	148.2	17,452.9	7,582.5	50.0	32.0
9160580	206.8	165.5	11,249.1	6,237.1	50.0	32.0
9470120	425.5	733.3	17.7	33.7	35.5	28.5
9470460	502.6	634.1	11.9	16.0	18.7	15.0
9470482	5,810.1	6,730.0	89.4	91.4	20.0	16.0
9470485	1,229.4	4,615.6	15.7	41.0	20.0	16.0
9470540	317.4	477.5	14.9	15.3	15.7	12.7
9470550	25.4	27.3	1.7	17.8	49.2	39.4
9470560	45.6	33.0	9.1	5.9	31.4	25.2
9470570	12.8	99.1	0.9	6.3	41.7	33.3
9470020	834.2	4,018.9	72.5	281.6	41.1	32.9
9590220	24.5	29.0	0.8	0.8	39.2	31.4
9590260	110.1	55.6	0.4	1.0	18.2	15.5
9730040	497.8	165.6	550.1	291.6	22.5	18.0
9730800	524.9	2,1??.7	569.1	3,4?5.9	25.0	20.0
9410860	838.9	1,313.2	695.3	632.1	25.0	20.0
9850500	73.0	220.2	83.1	202.8	34.0	27.0
9260200	74.6	94.3	7.4	7.5	19.0	15.2
9260750	1,830.8	2,567.6	49.5	18.1	20.0	17.0
9212050	646.8	1,099.8	38.5	46.7	20.6	16.5
9262200	3,714.3	3,836.8	4,694.2	5,291.9	12.5	10.0
9780270	424.4	645.7	140.1	177.8	0.9	0.3
9780280	8.3	15.3	19.5	35.4	11.6	9.3
9780290	37.1	273.1	21.3	142.6	20.0	16.0
9001000	3,751.3	3,790.2	184.2	33.4	15.0	12.0
9025600	1,846.5	2,170.9	24,771.8	22,232.3	11.1	8.9
9800010	6.8	34.4	1.9	2.0	11.3	9.0
9800200	28.4	233.2	139.1	178.7	43.3	34.7
9800790	28.1	36.9	55.7	54.9	12.5	10.0
9820110	42.1	71.4	7.6	3.5	25.0	20.0

TABLE B.7.--Wood and paper: printed matter (non-reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity	
	1960	1965	1960	1965
4030000	50.0	50.2	618.0	780.9
4209700	4,420.0	11,800.7	213,534.7	628,982.5
4221000	4,921.0	3,077.6	7,987.4	8.813.6
4740130	925.8	1,381.3	5,273.7	6,325.0
4740270	25.6	62.1	172.8	520.3
4728810	2.5	3.0	31.9	1.9
4729810	532.7	925.4	4,557.3	5,785.6
4729930	8.2	10.4	110.5	31.2
4717900	837.2	752.8	9,811.1	7,855.4
9521700	2.1	5.5	1.5	2.2
4799460	65.1	0.8	167.5	2.3
9530540	5.5	85.5	0.3	1.9
4724820	40.5	43.6	39.9	33.9
4724720	167.9	149.0	942.7	805.9
4724950	61.8	4.8	255.2	24.0
4775000	679.0	139.2	8,550.6	1,860.8
4740192	1,153.9	135.1	85,173.2	2,495.9
4799590	73.8	2.1	64.6	1.2
4303000	1,937.3	1,229.3	25,208.8	14,103.4
4303100	1.5	0.6	3.5	1.7
4716020	2,682.4	1,894.0	35,183.6	25,652.9
4726290	7,035.9	1,601.7	6,136.9	1,382.2
4729910	31.9	27.8	245.1	36.8
4726270	1,927.8	1,161.8	5,633.3	108.8

TABLE B.8.--Textile fibers and manufactures (non-reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity	
	1960	1965	1960	1965
3799300	25.2	9.6	5.2	1.5
3270010	403.1	375.7	573.4	541.3
3051350	27.0	15.4	27.5	31.1
3081360	1.8	5.7	3.1	2.3
3250600	33.1	6.5	25.7	4.5
3224150	10.8	2.7	40.2	38.4
3224000	711.4	100.5	468.9	43.9
3086100	211.0	417.4	303.0	672.7
3409000	90.3	174.9	0.6	8.2
3403000	2,946.0	3,074.0	9.5	23.9
3241500	9,140.1	3,417.9	54.6	22.6
3409700	432.0	221.0	2.6	1.1
3244000	291.9	209.5	1,732.5	940.4
3270700	17.4	4.4	32.0	22.3
3078020	328.8	109.0	271.9	76.4
3242000	328.5	268.4	445.4	342.3
3352110	150.1	241.4	827.1	1,912.2
3230270	504.8	492.8	579.1	546.9
3154100	901.3	461.3	962.3	1,054.1
3144100	1,944.5	288.4	1,529.0	164.1
3743900	1,444.9	2,093.5	2,100.2	5,017.2
3530050	35.6	1.8	28.6	1.6
3538900	2.9	3.8	0.6	2.9
3011000	3,994.7	1,398.6	8,916.3	3,084.4
3670010	421.5	28.8	1,432.0	40.9
3615650	97.0	44.2	58.8	26.6
3706010	2,062.0	1,956.1	486.0	394.1
3901100	525.0	1,032.9	961.9	1,276.7
3021400	543.5	718.3	365.7	292.6
3622000	94.1	84.1	26.0	27.9
3830100	304.0	181.5	108.5	101.6
3635100	2,676.0	2,703.1	420.1	403.1
3641150	615.8	9.9	140.1	1.8
3160920	1,009.9	152.4	12,247.9	1,786.8
3160800	3,595.1	2,383.1	32,205.3	1,101.9
3800100	45.9	339.3	54.5	232.7
3830200	1,359.2	1,767.6	250.4	284.7
3900400	636.5	537.9	78,988.0	52,842.7
3913000	590.9	1,790.4	1,309.1	3,023.9
3912600	599.1	490.3	1,133.7	643.6
3913400	30.2	152.5	139.0	111.7
3639300	6.4	6.4	10.8	9.2
3639500	18.1	90.9	10.1	41.0
3166690	5.1	148.4	1.1	46.0
3750900	1.9	3.5	0.2	0.2
3855900	13.8	36.0	4.4	7.1
3296000	7.9	12.3	1.1	1.3
3750400	671.1	383.6	51.0	24.5
3855100	1,537.5	1,847.9	127.4	116.5
3168500	82.8	128.3	14.4	15.0
3160800	0.4	1.9	0.5	27.6
3696280	1,397.0	2,095.7	4,272.1	4,831.4
3698800	45.4	119.0	347.1	767.7

TABLE B.9.--Non-metallic minerals (non-reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity	
	1960	1965	1960	1965
5390300	2,303.8	3,420.3	31,181.1	41,874.5
5380540	459.7	2,762.7	797.0	16,766.5
5120150	24.5	30.4	1.6	1.4
5463000	50.8	64.7	12,569.4	16,724.3
5467200	135.5	396.7	2,205.7	7,678.0
5301000	13,607.6	13,661.3	293.0	442.4
5564500	9.8	7.6	46.0	86.6
5560910	91.5	11.4	5.2	330.9
5712200	800.5	788.9	23,790.3	20,835.0
5730200	57.0	10.5	370.7	82.9
5730500	340.8	665.7	7,506.2	12,786.6
5260260	402.7	167.4	7,078.1	2,913.3
5109500	379.3	1,365.1	93.6	101.2
5110090	222.0	39.5	85.3	1.0
5950000	88,060.0	96,456.8	1,365.5	1,900.9

TABLE B.1).--Metals and metal products (non-reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity	
	1960	1965	1960	1965
6301000	75,204.5	145,930.4	9,521.3	12,701.6
6004000	5,541.4	5,543.6	123.8	165.0
6012300	15,037.7	34,543.7	167,540.3	340,859.4
6000300	0.0	73.1	30.5	51.9
6005130	111.0	1,030.1	4,633.2	5,325.5
6214000	3,070.0	363.5	46,197.8	7,042.3
6033700	337.3	404.0	167.0	385.5
6015400	1,047.4	1,530.0	1,815.8	2,020.4
6005000	1.5	.1	0.1	0.1
6383500	5.5	176.4	5.4	36.9
6050500	27.7	5.8	27.0	24.7
6055530	1,000.1	1,147.4	11,705.3	4,377.9
6000100	315.4	1,333.7	15,660.8	39,701.8
6111404	55.0	51.3	354.0	192.4
6100500	4,335.1	335.8	55,873.0	2,865.2
6036000	41,540.5	53,333.5	760,196.6	762,709.7
6036300	417.5	5,345.6	7,539.8	85,230.9
6113500	19.0	65.0	451.3	377.2
6150350	1.5	2.6	13.9	15.0
6011140	109.2	43.0	1,036.6	465.1
6001500	5,517.0	1,470.5	15,035.6	7,387.1
6091020	1,153.3	3,045.0	30,996.3	42,799.2
6092704	303.0	3,195.0	1,406.7	12,640.8
6112810	5.5	5.1	12.1	10.8
6112900	5.5	45.0	540.1	181.5
6200540	55.7	53.2	90.5	402.5
6150100	440.7	550.5	11,649.9	14,832.3
6730330	639.4	857.1	904.4	1,221.1
6100040	350.0	645.1	1,060.5	3,073.5
6100050	545.1	537.7	635.7	620.3
6100060	550.0	632.1	666.0	569.5
6118500	3,018.4	4,006.5	6,964.2	8,553.6
6118900	97.3	79.3	112.2	89.9
6150250	35.3	54.0	54.7	56.5
6200710	10.7	11.1	4.8	4.3
6200720	9.7	6.1	4.0	1.4
6200770	17.4	76.6	6.1	26.2
6200730	3.5	0.1	1.0	0.3
6200760	1.5	8.9	0.3	1.1
6790330	87.7	66.6	2.8	12.4
6544500	0.6	30.1	0.5	35.7
6544510	35.6	25.0	34.3	32.8
6458050	9,656.4	12,193.5	24,760.8	29,659.3
6790960	328.8	1,427.5	538.9	2,430.0
7900700	560,665.8	466,003.1	26.4	8.0

TABLE B.11.--Chemicals and related products (non-reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity	
	1960	1965	1960	1965
8231850	91.4	81.1	694.2	52.1
8380380	134.9	278.7	321.5	721.1
8245400	106.8	83.8	1,473.0	1,136.1
8247100	491.5	728.4	19,872.8	20,917.9
8312000	83.7	234.9	692.4	2,499.5
8380121	5,666.8	2,413.9	175,593.5	48,603.5
8380130	3.9	7.3	75.8	37.2
8380180	979.3	1,797.6	4,735.6	4,345.3
8380938	134.1	2,507.4	445.0	7,977.9
8310100	54.4	146.6	575.9	1,034.9
8245000	104.7	83.5	2,812.7	1,651.9
8380921	2,412.7	170.4	12,258.0	211.9
8050150	11.0	344.6	7.5	346.0
2220400	4,235.2	160.9	244.6	120.0
2210070	17.1	46.9	117.1	92.1
2342000	391.8	191.9	6,240.9	2,419.2
2345500	1,128.3	540.1	17,491.0	15,570.9
0327600	2,385.8	2,331.2	4,424.0	4,495.7
9850440	48.8	553.6	93.5	841.1
8040720	535.5	336.4	251.5	211.3
8040100	1,949.7	1.6	1,956.1	1.0
8070360	27.4	41.0	14.2	0.3
8380285	3.0	8.4	2.2	5.3
2270000	1,435.8	4,452.7	283.2	677.9
2280300	7.3	8.0	4.6	3.1
2280180	491.0	563.6	49.8	85.0
8722200	11.3	7.5	10.2	4.3
2275000	1,121.2	4,903.1	790.0	958.3
2210070	17.1	49.9	117.1	93.1
8721200	1,095.4	3,049.4	6.0	101.7
8722900	3,530.4	6,360.2	200.3	467.2
8725600	5,213.3	9,763.5	465.4	2,250.0
8730100	38.9	55.0	77.9	173.7
8431200	8.5	6.2	7.3	4.6
8402300	96.5	99.9	2.7	3.0
8420390	87.4	699.7	243.7	556.7
8441300	105.6	105.0	47.1	51.8
8420010	133.8	37.9	719.2	211.1
8330700	308.7	154.7	4,865.2	2,713.9
8330500	251.5	465.5	1,293.0	2,305.2
8719900	148.5	155.5	607.2	612.8
8335000	3,411.1	4,521.3	146.2	233.5
8339000	2,330.6	2,625.2	17,152.1	21,531.5
8342000	119.1	115.1	641.8	719.0
8343000	186.5	276.7	9,175.6	14,789.0
8350400	219.2	426.3	5,560.1	9,590.7
8380615	1,856.2	265.9	49.8	5.3
8300000	1,424.8	2,475.7	1,894.0	2,847.1
8380560	1,065.7	1,855.4	647.3	406.6
8130800	2.7	2.0	0.8	0.6
8380305	25.0	41.4	43.2	73.7
8010360	643.4	111.9	11,214.1	2,832.9
8040680	23.5	5.4	153.2	3.4
8040770	1,186.7	2,169.3	492.3	1,172.4
8380360	21.0	132.5	25.2	67.3
8040740	216.2	810.2	124.1	417.3

TABLE R.12.--Miscellaneous (non-reduced group).

Schedule A No.	Value (thousands of dollars)		Quantity	
	1960	1965	1960	1965
9160110	5.1	19.2	312.4	690.6
9160200	407.7	450.6	54.2	50.7
9470130	19.3	105.8	0.5	5.1
9470440	58.4	157.5	5.7	9.9
9470490	8.5	13.1	0.1	0.1
9470420	63.5	134.0	2.6	14.7
9470530	7.0	25.8	5.0	20.1
9470110	41.8	17.0	5.7	7.3
9470400	0.3	0.3	0.3	0.2
9470070	1,100.0	570.0	314.9	157.5
9470010	313.0	405.0	54.8	64.5
9590200	13.7	10.8	1.7	2.0
9590250	5.4	6.4	0.1	0.2
9730000	1,130.5	167.2	1,515.7	66.5
9725300	1,570.5	615.0	3,006.9	623.6
9410846	665.0	392.0	39,170.6	20,547.9
9850110	1,071.0	2,354.7	4,019.6	6,651.5
9260050	1,140.1	2,883.7	4.9	10.0
9260400	611.7	1,666.9	0.1	2.1
9214500	600.1	120.8	28.1	8.3
7100230	640.9	1,890.3	103.7	274.8
9780510	6.8	2.9	5.3	2.0
9790000	1.3	1.0	0.1	0.1
9790300	9.3	17.8	0.2	1.1
9001100	855.3	699.3	874.7	1,643.9
9010000	1,850.3	1,605.2	12,006.3	11,081.3
9800160	519.6	524.7	3,358.6	2,885.2
9800190	1,552.0	3,894.8	1,650.7	3,897.4
9800750	51.8	35.6	632.5	317.0
9820100	43.6	39.6	155.4	147.2

TABLE B.13.--Canada (metals).

	Export Volume (millions)	Industrial Production Index (1960=100)	Relative Price Variables (U.S. price relative to)		Tariff
			Domestic Suppliers	Third Country Suppliers	
1955....I	35.11	82.00	96.98	92.90	1.20
II	41.76	85.00	97.09	92.70	1.20
III	35.01	87.00	96.67	93.10	1.20
IV	36.97	89.00	95.74	94.00	1.20
1956....I	39.50	91.00	100.42	94.20	1.20
II	39.14	94.00	99.89	95.20	1.20
III	38.70	95.00	99.06	96.00	1.20
IV	43.71	96.00	97.83	97.20	1.20
1957....I	45.40	96.00	101.11	98.60	1.20
II	47.43	94.00	99.60	100.00	1.20
III	33.48	93.00	99.00	100.70	1.20
IV	33.35	92.00	99.50	100.20	1.20
1958....I	34.63	90.00	99.10	100.00	1.20
II	38.98	92.00	99.00	100.10	1.20
III	31.41	92.00	99.00	100.10	1.20
IV	34.70	94.00	99.19	99.90	1.20
1959....I	39.09	95.00	101.16	99.60	1.20
II	45.82	99.00	101.18	99.40	1.20
III	37.37	99.00	101.13	99.40	1.20
IV	33.81	100.00	101.61	99.60	1.20
1960....I	40.80	102.00	101.30	100.00	1.20
II	43.28	100.00	100.90	100.50	1.20
III	31.30	99.00	101.00	100.30	1.20
IV	35.08	100.00	102.01	99.30	1.20
1961....I	37.82	99.00	102.25	98.20	1.20
II	37.56	102.00	103.71	97.10	1.20
III	29.92	106.00	103.92	96.90	1.20
IV	35.95	108.00	102.96	97.80	1.20
1962....I	37.10	109.00	101.52	98.50	1.17
II	45.47	112.00	100.91	99.10	1.17
III	33.54	114.00	100.70	99.30	1.17
IV	40.27	115.00	100.81	99.20	1.17
1963....I	40.48	117.00	101.00	99.10	1.17
II	45.59	119.00	101.10	99.00	1.17
III	37.31	121.00	100.91	99.20	1.17
IV	47.11	125.00	100.60	99.50	1.17
1964....I	53.07	129.00	103.01	99.80	1.17
II	53.66	131.00	102.70	100.10	1.17
III	45.74	133.00	102.49	100.30	1.17
IV	51.28	134.00	102.49	100.30	1.17
1965....I	53.75	138.00	105.10	100.00	1.17
II	64.53	141.00	105.52	99.60	1.17
III	55.49	144.00	104.89	100.20	1.17
IV	74.27	148.00	103.14	101.90	1.17

Corresponding Variable in estimating equation:

| Symbol | X_i^j | P_j | $\dfrac{Pu.s.i}{Pdi}$ | $\dfrac{Pu.s.i}{Pc}$ | $(1 + T)$ |

TABLE B.14.--Canada (wood and paper).

	Export Volume (millions)	Industrial Production Index (1950=100)	Relative Price Variables (U.S. price relative to)		Tariff
			Domestic Suppliers	Third Country Suppliers	
1955....I	26.24	82.00	98.06	92.36	1.08
II	30.71	85.00	98.27	93.10	1.08
III	30.47	87.00	98.85	93.77	1.08
IV	33.33	89.00	95.91	94.57	1.08
1956....I	27.87	91.00	98.20	95.56	1.08
II	25.73	94.00	97.68	96.74	1.08
III	35.60	95.00	96.87	96.98	1.08
IV	35.11	96.00	95.67	96.19	1.08
1957....I	33.55	96.00	100.04	95.33	1.08
II	31.81	94.00	98.90	94.51	1.08
III	30.63	93.00	98.31	94.64	1.08
IV	30.30	90.00	89.80	95.81	1.08
1958....I	31.70	90.00	100.10	96.90	1.08
II	31.69	90.00	100.00	97.80	1.08
III	32.40	92.00	100.00	98.20	1.08
IV	33.33	94.00	100.00	98.30	1.08
1959....I	34.74	96.00	101.41	98.49	1.08
II	35.19	98.00	101.61	98.69	1.08
III	41.44	99.00	101.61	98.99	1.08
IV	35.08	100.00	101.41	99.30	1.08
1960....I	37.10	102.00	101.80	99.20	1.08
II	35.30	100.00	101.29	98.81	1.08
III	32.40	99.00	101.50	99.70	1.08
IV	32.00	100.00	102.52	102.12	1.08
1961....I	35.74	99.00	100.61	104.38	1.08
II	35.05	102.00	101.75	106.49	1.08
III	35.15	106.00	101.96	107.95	1.08
IV	34.90	108.00	101.02	108.69	1.08
1962....I	38.63	109.00	101.52	109.75	1.05
II	35.40	112.00	100.91	111.20	1.05
III	32.87	114.00	100.70	111.78	1.05
IV	31.49	115.00	100.81	111.49	1.05
1963....I	34.02	117.00	100.10	111.50	1.05
II	34.55	119.00	100.20	111.72	1.05
III	32.40	121.00	100.00	111.79	1.05
IV	33.90	125.00	99.70	111.86	1.05
1964....I	40.20	129.00	99.20	111.82	1.05
II	35.64	131.00	98.90	111.89	1.05
III	35.84	133.00	98.70	111.96	1.05
IV	40.39	134.00	98.70	112.26	1.05
1965....I	40.67	138.00	98.10	112.90	1.05
II	41.43	141.00	98.49	113.66	1.05
III	42.48	144.00	97.90	113.17	1.05
IV	44.00	148.00	96.27	111.48	1.05

Corresponding Variable in estimating equation:

Symbol	X_i^j	P_j	$\dfrac{Pu.s.i}{Pdi}$	$\dfrac{Pu.s.i}{Pc}$	$(1 + T)$

TABLE B.15.--United Kingdom (chemicals).

		Export Volume (millions)	Industrial Production Index (1960=100)	Relative Price Variables (U.S. price relative to)		Tariff
				Domestic Suppliers	Third Country Suppliers	
1955	I	15.29	86.00	111.56	82.36	1.10
	II	15.18	86.00	112.82	82.32	1.10
	III	13.14	87.00	111.49	83.22	1.10
	IV	12.87	89.00	109.20	84.10	1.10
1956	I	10.79	87.00	109.28	86.10	1.10
	II	12.33	86.00	107.26	88.05	1.10
	III	11.10	86.00	105.94	90.01	1.10
	IV	10.33	86.00	105.26	92.00	1.10
1957	I	12.04	87.00	105.12	93.00	1.10
	II	10.96	89.00	104.04	95.01	1.10
	III	12.00	90.00	103.22	96.01	1.10
	IV	12.42	88.00	102.64	96.01	1.10
1958	I	13.58	88.00	102.70	95.00	1.10
	II	15.58	87.00	101.73	95.00	1.10
	III	12.95	87.00	101.35	95.00	1.10
	IV	15.83	88.00	101.52	95.01	1.10
1959	I	13.20	88.00	101.20	94.09	1.10
	II	17.73	91.00	101.17	95.04	1.10
	III	17.94	93.00	101.00	95.04	1.10
	IV	19.09	98.00	100.66	98.01	1.10
1960	I	24.80	100.00	100.71	100.00	1.10
	II	23.40	100.00	100.72	100.00	1.10
	III	27.00	100.00	100.21	100.00	1.10
	IV	26.40	100.00	99.18	100.00	1.10
1961	I	24.36	101.00	97.12	101.00	1.10
	II	21.09	101.00	96.19	103.04	1.10
	III	20.10	101.00	95.67	103.04	1.10
	IV	20.10	99.00	95.54	103.01	1.10
1962	I	20.69	100.00	93.75	103.01	1.08
	II	20.30	101.00	93.39	101.01	1.08
	III	21.39	102.00	93.12	102.01	1.08
	IV	24.26	100.00	92.95	102.01	1.08
1963	I	25.10	100.00	91.74	103.01	1.08
	II	39.70	103.00	91.79	102.01	1.08
	III	29.00	107.00	91.31	101.01	1.08
	IV	30.70	109.00	90.29	102.04	1.08
1964	I	34.46	111.00	89.84	103.04	1.08
	II	33.56	112.00	89.22	104.09	1.08
	III	36.93	113.00	88.41	105.16	1.08
	IV	42.23	115.00	87.41	107.16	1.08
1965	I	29.67	116.00	87.31	109.16	1.08
	II	40.95	116.00	86.50	110.25	1.08
	III	42.95	117.00	85.59	110.25	1.08
	IV	42.00	118.00	84.59	110.25	1.08

Corresponding Variable in estimating equation:

Symbol	X_i^j	P_j	$\dfrac{Pu.s.i}{Pdi}$	$\dfrac{Pu.s.i}{Pc}$	$(1 + T)$

TABLE B.16.--United Kingdom (machinery).

	Export Volume (millions)	Industrial Production Index (1960=100)	Relative Price Variables (U.S. price relative to)		Tariff
			Domestic Suppliers	Third Country Suppliers	
1955....I	28.00	86.00	104.82	94.98	1.30
II	37.18	86.00	104.79	95.09	1.30
III	26.51	87.00	103.56	95.89	1.30
IV	33.56	89.00	101.42	96.18	1.30
1956....I	24.49	87.00	105.08	97.97	1.30
II	28.00	86.00	103.14	98.67	1.30
III	25.93	86.00	101.87	99.03	1.30
IV	42.72	86.00	101.22	99.04	1.30
1957....I	37.42	87.00	105.23	98.99	1.30
II	31.28	88.00	104.14	99.22	1.30
III	26.32	90.00	103.32	99.45	1.30
IV	29.79	88.00	102.75	98.61	1.30
1958....I	26.84	88.00	101.37	97.52	1.30
II	26.42	87.00	100.41	96.36	1.30
III	26.74	87.00	100.04	95.98	1.30
IV	26.25	88.00	100.21	97.40	1.30
1959....I	27.73	88.00	102.42	98.72	1.30
II	34.74	91.00	102.39	99.02	1.30
III	26.39	93.00	102.21	98.84	1.30
IV	28.28	98.00	101.87	100.19	1.30
1960....I	36.20	100.00	101.82	100.68	1.30
II	81.70	100.00	101.83	100.31	1.30
III	70.50	100.00	101.31	99.83	1.30
IV	81.90	100.00	100.27	99.24	1.30
1961....I	57.43	101.00	98.69	99.63	1.30
II	63.07	101.00	97.74	99.07	1.30
III	52.67	101.00	97.25	98.57	1.30
IV	56.37	99.00	97.08	99.09	1.30
1962....I	58.33	100.00	96.15	98.78	1.22
II	59.40	101.00	95.79	96.59	1.22
III	56.34	102.00	95.51	96.89	1.22
IV	60.20	100.00	95.33	95.83	1.22
1963....I	66.67	100.00	95.36	95.82	1.22
II	65.25	103.00	95.42	94.05	1.22
III	58.30	107.00	94.91	92.28	1.22
IV	74.90	109.00	93.85	91.41	1.22
1964....I	88.22	111.00	95.51	91.77	1.22
II	96.24	112.00	94.85	90.91	1.22
III	89.80	113.00	93.98	90.14	1.22
IV	106.50	115.00	92.92	91.22	1.22
1965....I	98.19	116.00	94.02	92.21	1.22
II	120.10	116.00	94.02	91.49	1.22
III	101.71	117.00	92.17	90.74	1.22
IV	132.38	118.00	91.09	89.98	1.22

Corresponding Variable in estimating equation:

Symbol	X_i^j	P_j	$\dfrac{P_{u.s.i}}{P_{di}}$	$\dfrac{P_{u.s.i}}{P_c}$	$(1 + T)$

TABLE B.17.--United Kingdom (textiles).

	Export Volume (millions)	Industrial Production Index (1960=100)	Relative Price Variables (U.S. price relative to)		Tariff
			Domestic Suppliers	Third Country Suppliers	
1955....I	30.82	86.00	117.56	116.74	1.42
II	15.06	86.00	117.24	116.43	1.42
III	8.02	87.00	115.87	115.06	1.42
IV	9.02	89.00	113.48	112.69	1.55
1956....I	10.34	87.00	108.39	110.50	1.42
II	14.33	86.00	106.39	108.46	1.42
III	25.71	86.00	105.08	107.12	1.42
IV	54.02	86.00	104.41	106.44	1.42
1957....I	64.19	87.00	101.96	105.55	1.42
II	43.51	88.00	100.90	103.42	1.42
III	30.84	90.00	100.11	100.53	1.42
IV	37.37	88.00	99.55	96.88	1.42
1958....I	32.00	88.00	103.82	95.13	1.42
II	26.21	87.00	102.84	94.23	1.42
III	13.79	87.00	102.46	94.89	1.42
IV	15.83	88.00	102.63	97.08	1.42
1959....I	12.16	88.00	101.61	96.14	1.42
II	13.40	91.00	101.58	98.14	1.42
III	13.09	93.00	101.40	97.97	1.42
IV	27.73	98.00	101.07	99.66	1.42
1960....I	43.90	100.00	102.02	100.51	1.42
II	26.30	100.00	102.03	100.52	1.42
III	22.90	100.00	101.51	101.01	1.42
IV	32.60	100.00	100.47	98.98	1.42
1961....I	36.44	101.00	97.71	98.03	1.42
II	19.90	101.00	96.77	97.50	1.42
III	21.39	101.00	96.24	97.37	1.42
IV	20.78	99.00	96.11	95.19	1.42
1962....I	18.43	100.00	96.73	94.83	1.33
II	16.70	100.00	96.36	96.47	1.33
III	12.73	100.00	96.08	96.28	1.33
IV	14.75	100.00	95.50	96.22	1.33
1963....I	20.78	100.00	95.74	96.27	1.33
II	23.17	103.00	95.80	95.76	1.33
III	26.80	107.00	95.29	95.63	1.33
IV	29.50	109.00	94.22	95.70	1.33
1964....I	28.42	111.00	94.03	95.96	1.33
II	29.41	112.00	93.38	96.91	1.33
III	29.90	113.00	92.52	97.62	1.33
IV	30.39	115.00	91.48	96.62	1.33
1965....I	35.05	116.00	90.62	95.72	1.33
II	38.00	116.00	89.96	95.59	1.33
III	38.38	117.00	89.01	95.34	1.33
IV	42.10	118.00	89.97	95.30	1.33

Corresponding Variable in estimating equation:

Symbol	X_i^j	P_j	$\dfrac{Pu.s.i}{Pdi}$	$\dfrac{Pu.s.i}{Pc}$	$(1 + T)$

TABLE B.18.--United Kingdom (wood and paper).

	Export Volume (millions)	Industrial Production Index (1960=100)	Relative Price Variables (U.S. price relative to)		Tariff
			Domestic Suppliers	Third Country Suppliers	
1955....I	16.35	86.00	100.16	103.21	1.10
II	14.47	86.00	99.90	103.25	1.10
III	16.63	87.00	98.72	103.34	1.10
IV	16.21	89.00	96.69	103.45	1.10
1956....I	14.27	87.00	102.76	103.37	1.10
II	12.00	86.00	100.86	102.22	1.10
III	11.98	86.00	99.62	101.10	1.10
IV	11.63	86.00	102.00	100.00	1.10
1956....I	14.41	87.00	106.39	100.00	1.10
II	13.40	88.00	105.29	98.94	1.10
III	13.47	90.00	104.46	98.95	1.10
IV	12.95	88.00	103.88	98.95	1.10
1958....I	11.47	88.00	101.16	100.00	1.10
II	14.00	87.00	100.21	100.00	1.10
III	13.05	87.00	99.83	100.00	1.10
IV	12.81	88.00	100.01	101.04	1.10
1959....I	11.13	88.00	103.43	103.09	1.10
II	14.43	91.00	103.40	102.06	1.10
III	21.65	93.00	103.22	102.06	1.10
IV	15.35	98.00	102.88	101.01	1.10
1960....I	18.50	100.00	102.92	100.00	1.10
II	21.10	100.00	102.94	100.00	1.10
III	20.60	100.00	102.41	100.00	1.10
IV	20.20	100.00	101.36	100.00	1.10
1961....I	21.39	101.00	100.25	100.00	1.10
II	20.59	101.00	99.29	98.02	1.10
III	19.31	101.00	99.75	98.02	1.10
IV	17.65	99.00	98.62	99.02	1.10
1962....I	13.82	100.00	98.37	99.02	1.08
II	19.40	101.00	97.99	99.00	1.08
III	17.43	102.00	97.71	99.01	1.08
IV	17.43	100.00	97.52	99.01	1.08
1963....I	15.49	100.00	97.36	99.02	1.08
II	17.23	103.00	97.42	99.01	1.08
III	19.30	107.00	96.90	99.00	1.08
IV	19.70	109.00	95.82	98.00	1.08
1964....I	23.37	111.00	95.61	98.02	1.08
II	22.48	112.00	94.23	97.03	1.08
III	21.88	113.00	94.08	96.04	1.08
IV	21.55	115.00	93.01	96.12	1.08
1965....I	22.38	116.00	92.68	96.19	1.08
II	23.42	116.00	91.82	95.24	1.08
III	25.52	117.00	90.85	95.24	1.08
IV	28.76	118.00	89.79	95.24	1.08

Corresponding Variable in estimating equation:

Symbol	X_i^j	P_j	$\dfrac{Pu.s.i}{Pdi}$	$\dfrac{Pu.s.i}{Pc}$	$(1 + T)$

TABLE B.19.--European Economic Community (Chemicals).

	Export Volume (millions)	Industrial Production Index (1960=100)	Relative Price Variables (U.S. price relative to)		Tariff
			Domestic Suppliers	Third Country Suppliers	
1955....I	14.71	67.97	108.28	89.00	1.20
II	15.81	70.08	108.84	89.00	1.20
III	10.12	72.53	108.04	90.00	1.20
IV	13.68	74.08	107.20	90.00	1.20
1956....I	12.02	72.86	108.87	92.00	1.20
II	14.56	77.08	108.43	92.00	1.20
III	13.63	78.59	107.62	92.00	1.20
IV	14.35	79.20	106.47	92.00	1.20
1957....I	13.98	80.57	106.01	93.00	1.20
II	16.38	81.08	105.12	93.00	1.20
III	13.37	82.19	104.26	94.00	1.20
IV	17.58	82.09	103.38	94.00	1.20
1958....I	17.89	83.00	103.05	95.00	1.20
II	19.26	82.24	101.83	95.00	1.20
III	16.63	83.28	100.42	95.00	1.20
IV	22.08	84.17	101.86	97.00	1.20
1959....I	20.21	85.12	101.77	100.00	1.20
II	17.53	88.31	102.08	99.00	1.20
III	17.01	90.66	101.90	99.00	1.20
IV	17.37	94.40	101.20	100.00	1.20
1960....I	24.00	96.80	100.89	100.00	1.20
II	26.00	99.39	100.51	100.00	1.20
III	24.70	101.47	100.03	100.00	1.20
IV	24.00	103.01	99.43	100.00	1.20
1961....I	29.01	105.46	97.75	101.00	1.20
II	26.53	105.95	97.20	99.00	1.20
III	30.59	107.56	96.71	99.00	1.20
IV	28.14	109.63	96.27	101.00	1.20
1962....I	27.06	111.95	94.42	101.00	1.18
II	26.40	113.00	94.18	99.00	1.18
III	25.94	115.33	93.53	100.00	1.18
IV	24.65	115.80	92.51	100.00	1.18
1963....I	29.12	115.37	90.46	101.00	1.15
II	26.93	120.53	89.67	100.00	1.15
III	34.80	122.49	88.86	99.00	1.15
IV	27.30	125.18	88.03	98.00	1.15
1964....I	32.57	127.85	87.86	99.00	1.15
II	36.53	127.74	87.04	98.00	1.15
III	45.94	127.00	86.30	97.00	1.15
IV	48.06	130.00	85.64	99.00	1.15
1965....I	59.62	131.48	85.71	101.00	1.15
II	55.62	133.41	85.04	100.00	1.15
III	58.48	133.04	84.35	100.00	1.15
IV	51.81	136.84	83.64	100.00	1.15

Corresponding Variable in estimating equation:

Symbol	X_1^j	P_j	$\dfrac{Pu.s.i}{Pdi}$	$\dfrac{Pu.s.i}{Pc}$	$(1 + T)$

TABLE B.20.--European Economic Community (machinery).

| | Export Volume (millions) | Industrial Production Index (1960=100) | Relative Price Variables (U.S. price relative to) | | Tariff |
			Domestic Suppliers	Third Country Suppliers	
1955....I	111.76	67.97	95.88	95.88	1.25
II	110.94	70.08	95.98	94.41	1.25
III	90.81	72.53	95.66	94.01	1.25
IV	108.97	74.08	94.85	94.00	1.25
1956....I	129.32	72.86	100.17	93.05	1.25
II	113.67	77.08	99.76	92.46	1.25
III	94.73	78.59	99.03	91.42	1.25
IV	123.48	79.20	97.96	89.96	1.25
1957....I	128.49	80.57	103.99	88.89	1.25
II	133.19	81.08	103.12	88.21	1.25
III	127.37	82.19	102.27	90.13	1.25
IV	117.37	82.09	101.41	95.61	1.25
1958....I	119.26	83.00	102.75	93.02	1.25
II	122.00	82.24	101.53	90.65	1.25
III	94.95	83.28	100.12	88.98	1.25
IV	105.95	84.17	101.56	90.15	1.25
1959....I	93.40	85.12	104.01	99.31	1.25
II	104.02	88.31	104.33	100.67	1.25
III	97.42	90.66	104.14	94.55	1.25
IV	135.35	94.40	103.43	97.34	1.25
1960....I	171.50	96.80	103.10	96.91	1.25
II	206.90	99.39	102.72	98.32	1.25
III	216.40	101.47	102.23	104.68	1.25
IV	189.40	103.01	101.62	100.03	1.25
1961....I	194.06	105.46	100.91	95.47	1.25
II	257.52	105.95	100.34	93.93	1.25
III	191.49	107.56	99.83	90.38	1.25
IV	219.31	109.63	99.38	88.72	1.25
1962....I	267.94	111.95	99.07	90.05	1.23
II	268.30	113.00	98.81	88.61	1.23
III	202.38	115.33	98.14	87.83	1.23
IV	227.43	115.80	97.07	88.65	1.23
1963....I	236.57	115.37	96.01	88.54	1.20
II	263.96	120.53	95.17	85.70	1.20
III	228.80	122.49	94.31	84.97	1.20
IV	262.20	125.18	93.42	94.50	1.20
1964....I	298.12	127.85	93.49	85.65	1.20
II	288.32	127.74	92.62	83.09	1.20
III	234.36	127.00	91.83	84.48	1.20
IV	263.30	130.20	91.13	85.49	1.20
1965....I	301.14	131.48	90.98	88.18	1.20
II	382.10	133.41	90.27	87.52	1.20
III	285.90	133.04	89.53	86.95	1.20
IV	371.71	136.84	88.78	88.22	1.20

Corresponding Variable in estimating equation:

Symbol	X_i^j	P_j	$\dfrac{Pu.s.i}{Pdi}$	$\dfrac{Pu.s.i}{Pc}$	$(1 + T)$

TABLE B.21.--European Economic Community (metals).

| | Export Volume (millions) | Industrial Production Index (1960=100) | Relative Price Variables (U.S. price relative to) | | Tariff |
			Domestic Suppliers	Third Country Suppliers	
1955....I	78.47	67.97	94.98	102.50	1.14
II	95.06	70.08	95.09	102.78	1.14
III	62.56	72.53	95.89	104.24	1.14
IV	83.22	74.08	96.18	106.90	1.14
1956....I	90.56	72.86	97.97	109.58	1.14
II	79.44	77.08	98.67	112.28	1.14
III	63.52	78.59	99.02	113.74	1.14
IV	72.07	79.20	99.04	113.90	1.14
1957....I	81.03	80.57	98.99	115.62	1.14
II	79.79	81.08	99.22	118.88	1.14
III	78.11	82.19	99.45	117.21	1.14
IV	62.00	82.00	98.61	110.72	1.14
1958....I	54.95	83.00	97.52	104.58	1.14
II	55.37	82.24	96.36	98.82	1.14
III	46.42	83.28	95.93	96.86	1.14
IV	61.67	84.17	97.40	98.61	1.14
1959....I	33.40	85.12	98.72	99.38	1.14
II	32.16	88.31	99.02	99.13	1.14
III	29.07	90.66	98.84	99.17	1.14
IV	15.86	94.40	100.19	99.49	1.14
1960....I	40.50	96.80	100.68	99.94	1.14
II	85.30	99.39	100.31	100.50	1.14
III	87.40	101.47	99.83	100.29	1.14
IV	80.10	103.01	99.24	99.31	1.14
1961....I	80.50	105.46	99.63	98.37	1.14
II	66.63	105.95	99.07	97.52	1.14
III	51.88	107.56	98.57	97.22	1.14
IV	50.39	109.63	99.09	97.48	1.14
1962....I	42.45	111.95	98.78	98.14	1.11
II	48.40	113.00	96.59	99.19	1.11
III	47.92	115.33	96.89	98.10	1.11
IV	40.59	115.80	95.83	94.98	1.11
1963....I	30.78	115.37	95.82	92.03	1.11
II	43.27	120.53	94.05	89.21	1.11
III	39.50	122.49	92.28	88.37	1.11
IV	41.50	125.18	91.41	89.42	1.11
1964....I	43.17	127.85	81.77	90.08	1.11
II	45.45	127.74	90.91	90.35	1.11
III	48.12	127.00	90.14	90.27	1.11
IV	46.12	130.20	91.22	89.85	1.11
1965....I	46.80	131.48	92.21	89.35	1.11
II	46.95	133.41	91.49	88.34	1.11
III	47.71	133.04	90.74	86.68	1.11
IV	49.81	136.84	89.98	85.04	1.11

Corresponding Variable in estimating equation:

| Symbol | X_1^j | P_j | $\dfrac{Pu.s.i}{Pdi}$ | $\dfrac{Pu.s.i}{Pc}$ | $(1 + T)$ |

TABLE B.22.--European Economic Community (miscellaneous).

| | Export Volume (millions) | Industrial Production Index (1960=100) | Relative Price Variables (U.S. price relative to) | | Tariff |
			Domestic Suppliers	Third Country Suppliers	
1955....I	34.00	67.97	110.74	111.58	1.16
II	29.41	70.08	110.86	111.68	1.16
III	19.53	72.53	110.49	110.33	1.16
IV	28.39	74.08	109.55	106.47	1.16
1956....I	40.56	72.86	107.94	110.16	1.16
II	32.22	77.08	107.55	107.57	1.16
III	18.79	78.59	106.75	108.18	1.16
IV	23.04	79.20	105.60	102.54	1.16
1957....I	30.32	80.57	102.82	106.36	1.16
II	34.04	81.08	101.96	103.95	1.16
III	30.53	82.19	101.12	104.50	1.16
IV	27.89	82.09	100.26	103.86	1.16
1958....I	25.37	83.00	103.16	102.83	1.16
II	29.05	82.24	101.93	100.82	1.16
III	18.21	83.28	100.52	99.01	1.16
IV	23.44	84.17	101.96	99.40	1.16
1959....I	22.47	85.12	103.70	99.43	1.16
II	21.13	88.31	104.02	99.50	1.16
III	22.27	90.66	103.83	97.81	1.16
IV	21.62	94.40	103.13	97.79	1.16
1960....I	22.80	96.80	99.98	100.98	1.16
II	24.30	99.39	99.61	100.77	1.16
III	24.00	101.47	99.13	99.92	1.16
IV	27.00	103.01	98.54	98.43	1.16
1961....I	30.50	105.46	102.49	97.40	1.16
II	30.20	105.95	101.91	94.13	1.16
III	28.42	107.56	101.40	91.95	1.16
IV	33.43	109.63	100.93	91.67	1.16
1962....I	31.18	111.95	103.91	90.23	1.13
II	36.50	113.00	103.64	87.78	1.13
III	30.20	115.33	102.94	86.05	1.13
IV	32.57	115.80	101.81	87.96	1.13
1963....I	36.47	115.37	103.71	85.80	1.13
II	48.12	120.53	102.80	86.38	1.13
III	39.50	122.49	101.87	84.80	1.13
IV	42.80	125.18	100.91	84.00	1.13
1964....I	45.74	127.85	99.22	85.96	1.13
II	52.48	127.74	98.29	85.94	1.13
III	43.76	127.00	97.46	84.33	1.13
IV	50.39	130.20	96.71	82.21	1.13
1965....I	52.89	131.48	96.86	83.32	1.13
II	73.90	133.41	96.11	82.00	1.13
III	64.76	133.04	95.32	81.43	1.13
IV	70.76	136.84	94.52	81.48	1.13

Corresponding Variable in estimating equation:

| Symbol | X_i^j | P_j | $\dfrac{Pu.s.i}{Pdi}$ | $\dfrac{Pu.s.i}{Pc}$ | $(1 + T)$ |

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