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Trade Policy Reforms in the 1990s:
Effects of E.O. 470
and the Import Liberalization Program

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Elizabeth S. Tan

PHILIPPINE INSTITUTE FOR DEVELOPMENT STUDIES

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Abbreviations

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BOP	balance of payments
E.O.	Executive Order
EPRs	effective protection rates
ILP	Import Liberalization Program
M.O.	Memorandum Order
NEC	non-essential consumer
OER	official exchange rate
PSCC	Philippine Standard Commodity Classification
QRs	quantitative restrictions
TRP	Tariff Reform Program
UC	unclassified consumer



Introduction

IN the 1980s, many developing countries adopted trade policy reform as part of a broader structural adjustment program in the face of the changing world economic environment. The Philippines was no exception to this economic mood that swept the times. Trade reform has in fact been a recurring theme in the Philippines, first in the early 1960s and then in the 1980s. The first attempt at trade reform was brief and incomplete: exchange controls were lifted but eventually reimposed while tariffs and nontariff policies remained restrictive. The second attempt covered tariff, nontariff and complementary tax reforms; there was, however, no immediate provision for relaxing exchange controls.

Trade reform continues in the 1990s and its objectives are, first, to reduce the distortions on relative prices created by a protective trade regime, thereby increasing the efficiency with which the economy can use its resources; and second, to improve the trade balance or, more explicitly, to increase the competitiveness of exports and import substitutes. Trade reform is crucial because past experiences have shown the growth constraints brought about by an import-substitution policy. The corrective measures have also taken on a new sense of urgency because of the country's foreign debt problem.

The objective of this study is to assess the short- and medium-term impact of trade reform policies in the 1990s using a partial equilibrium model. This study is particularly interested in the effects of changes in the tariff rates (i.e., the implementation of E.O. 470) and in the lifting of quantitative restrictions (QRs).

This paper is organized into five chapters. The first chapter briefly reviews trade policy and trade policy reform from the 1950s to the

1980s. It discusses in great detail the experiences of the 1980s when a major trade reform was undertaken. Chapter 2 reviews the trade reform policies pursued in the 1990s: E.O. 470, E.O. 8, the ongoing import liberalization program and the lifting of foreign exchange controls. The third chapter presents the following: first, the theoretical and simulation models, together with their assumptions, arguments and weaknesses; second, the estimation methodology including some changes and adaptations made for assessing medium-term effects; and third, data sources and computational details. Chapter 4 analyzes the empirical and simulation results from the Chunglee and simulation models, respectively. The last chapter consolidates the findings and analyses of the study and ends with a brief conclusion.

HISTORY OF TRADE POLICY AND TRADE POLICY REFORM

A number of studies have documented Philippine trade and industrial policies. For a brief history covering the first three decades, I have drawn from Baldwin (1975).¹

The character of trade policy shortly after the second World War was largely determined by (a) foreign exchange shortage, and (b) the constraints imposed by the Free Trade Act of 1946 and the fixed exchange rate in curbing imports. Hence, the policy response became that of raising domestic sales taxes on imports and imposing QRs.² When both measures failed to reduce imports, exchange control was used.

The character of exchange control changed in the decade of the 1950s, from regulating imports to protecting local producers. Although exchange control was used primarily to avert an impending balance-of-payments crisis, it eventually evolved into a system of rationing foreign exchange based on the essentiality of a commodity.

1. Baldwin (1975).
2. The Import Control Act of 1948.

The policy was simple: if a local good was sufficiently produced to meet domestic demand, imports were restricted; if a good had been granted an import license, foreign exchange was automatically allocated.

Upon the expiration of the Philippine Trade Act of 1946, tariffs were used to discourage imports and to protect local producers. Imports were taxed at 5 percent in 1955, and this increased by 5 percent every year until 1973 when the tariffs on imports will have been 100 percent. This seemed redundant in the face of an overvalued exchange rate at P2 to the US dollar and pervasive QRs.

The first attempt at trade policy reform came in the 1960s due to (a) pressure from exporters, and (b) dissatisfaction over the way exchange controls were implemented and the failure to maintain high growth rates in the early 1950s. It started with a period of brief decontrol spread over three stages, where the percentage of foreign exchange transaction under the free market rate of P3.00 to the US dollar was gradually increased from 25 to 50 and finally to 75 percent. Complete decontrol was decreed in January 1962; by November 1965, the peso was formally devalued to P3.90 per US dollar. This period of exchange decontrol was an incomplete trade reform since exchange rate liberalization was implemented without any parallel reform in lifting QRs and in reducing tariffs and domestic sales taxes.

Decontrol continued in the first two years of the next administration; nevertheless, exchange controls were reimposed starting in mid-1967 due to the deterioration of the balance of payments brought about largely by expansionary policies in the administration's first two years. Since the balance-of-payments situation did not improve and eventually became untenable toward late 1969, there was no choice but to devalue the peso from P3.90 to P6.40 per US dollar in February 1970.

Trade policy in the 1970s remained inward-looking despite the initial attempt at reform. Although the Tariff Code was simplified in 1973, tariffs continued to be high: there were six tariff rates ranging from 10 to 100 percent. The 1973 code was in effect until 1980. In the meantime, non-tariff policy became more restrictive: the system of classifying commodities based on essentiality remained but the

categories increased. The system of import restriction became more complex as more government bureaus were created to implement import licensing. Export taxes on coconut and sugar were imposed. The number of commodities that were regulated increased from 1,307 lines in 1970 to 1,820 in 1980; this was the height of import restriction based on commodity line counts, only slightly surpassed in 1984 (Table 1). After 1970, exchange controls continued despite the adoption of a managed float.

The impressive growth in the 1970s is attributable to a mixture of a protectionist trade regime, massive investment in public infrastructure financed by cheap foreign loans, and a political environment perceived to be more stable than that in the late 1960s. Nevertheless, toward the late 1970s, policymakers already began to recognize the need for reform because of the major flaws and limitations of past industrial policy.³ Thus, despite the absence of

Table 1
The Import Liberalization Program: 1980-1989

Year	Restricted	Re-restricted	Liberalized	Re-liberalized	Net
1980	1,820*				1,820*
1981	2		263		1,559
1982	253	52	617		1,247
1983	598	28	48		1,825
1984	6	42	1		1,872
1985			70	4	1,798
1986		4	951	28	823
1987		2	170	4	651
1988		173 ^a	209	10	605
1989			56	72	477

a : Includes 49 items which were liberalized but regulated in Lists A, B or C, and 124 not in Circular 1029.

* : From 1970 to 1980 to include 1307 lines in 1970.

Source: De Dios (1994).

3. Montes, Manuel, 1988. The 1976-1979 Extended Fund Facility from the IMF was a failed attempt to press for reforms.

strong commitment, a second attempt at trade reform began in 1981 as part of a structural adjustment program. The reform proved difficult to implement since the economy had by then started to slow down.

The Tariff Reform Program (TRP) of 1981 was complemented by the lifting of QRs on imports, the abolition of all export taxes except those on logs, and by a tax reform. The objective of the 1981 TRP was to make levels of protection uniform among and within sectors and to achieve EPRs within the range from 30 to 80 percent. Tariff rates were reduced gradually from a peak of 100 percent to a maximum of 50 percent and a minimum of 10 percent by 1985. The reform focused on three areas: first, tariff rates on 177 non-essential consumer (NEC) and unclassified consumer (UC) items were reduced from a peak rate of 100 to 50 percent; second, tariff rates on 295 lines involving 14 key industries were reduced while rates on 100 lines were increased; and third, for ten residual sectors, rates on 128 lines were reduced while those on 13 lines were increased.⁴ The Import Liberalization Program (ILP) never really got off the ground because of the 1983 balance-of-payments crisis; it was postponed for three years. The peso was devalued twice in a span of one year in response to the crisis while import restriction became more pronounced as ad valorem taxes on imports were increased and importation of luxury goods were virtually banned. A series of tax reforms from 1983 to 1985 gradually unified the sales taxes on imports and import substitutes; therefore, the additional protection from the differential sales tax rates was removed. By 1985, the mark-up rate⁵ on semi-essential and essential goods was also reduced to a uniform 25 percent and was eventually removed by 1986. By 1988, when the value-added tax was implemented, sales tax on imports as well as locally produced goods were unified at 10 percent.

The new administration established in 1986 pursued the ILP to hasten economic recovery. Many factors made the gains in this brief

4. Medalla (1986a).

5. The mark-up rate increased the tax base of imports; this effectively increased the total duties paid.

period more realizable: first, the initial strong political will of the new government; second, the implementation of the ILP was riding on a consumption-led recovery between 1986 and 1988; third, in late 1987, crude oil prices dropped while world prices of coconut recovered; and fourth, inflation rate was very low during this period.⁶ The first phase of the ILP, January 1981 to 1988, lifted QRs on a total of 2,329 PSCC lines although the greatest gains were actually made between 1986 and 1988 (Table 1). In 1986, about half of 951 commodities liberalized were manufactured goods such as textile, leather, rubber, paper and iron and steel products; 20 percent were food products. In 1987, QRs on 170 commodities were lifted; the largest group, about 77 lines were textile, yarn and fibers. In 1988, QRs on 209 lines were lifted, mostly textile, yarn and fibers, paper and paperboard, iron and steel products. The remaining 673 PSCC lines was divided into lists A, B, and C. Those under list A were for immediate liberalization and as of December 1989, 94 lines were liberalized; those under list B were for review and those under list C, consisting of 114 lines, were for continued regulation due to national security and health reasons.

The combined protection from tariff and indirect taxes on a good or on an industry may be seen in its effective protection rate (EPR).⁷

6. Inflation rates were 0.75 percent in 1986, 3.79 percent in 1987 and 8.76 percent in 1988.

7. On top of tariffs, indirect taxes had an additional protective effect in 1983 and 1985 because sales taxes on imports were paid in advance and the tax base included a mark-up rate ranging from 25 to 100 percent. Hence, for 1983 and 1985, the effective protection rate of sector j (EPR _{j}) was computed as follows:

$$EPR_j = \frac{(1 + t_j) [1 + S_{mj} / 1 + S_j] - \sum a_{ij}^{ft} (1 + t_{iv})}{1 - \sum a_{ij}^{ft}}$$

where t_j is implicit rate on output

S_{mj} = $1+f(1+m)$

f = the advance sales tax

m = the mark-up rate

t_{ii} = the implicit rate on inputs

S_j = sales tax on local substitutes.

Tables 2 and 3 show the EPR structures for 1983, 1985, 1986 and 1988 assuming without and with duty drawbacks, respectively. In Table 2, the combined effect of the TRP of 1981 and the indirect tax reform brought down the average EPR for the economy from 50 percent in 1983 to 37 percent in 1986; the more substantial change was between 1985 and 1986, and this was primarily due to the indirect tax reform that abolished the mark-up rates and unified sales taxes on imports and local substitutes. Table 3 shows that with the strict implementation of duty drawbacks, in effect rebating the import levies paid on inputs used to produce exportables, export taxes continued to penalize the exportable sector by 4 percent in 1983 and 4.5 percent in 1985. The penalty rate increased in 1985 because export taxes on coconut and its by-products were raised by 5 to 7 percent, and on animal feeds by 6 percent.⁸ The penalty rate dropped to 1.4 percent in 1986 and 1988 because all export taxes except those on logs were abolished in 1986; the export tax on logs stood at 20 percent. Trade reform in the 1980s brought down the levels of protection and instituted a dispersal of rates among sectors as tariff rates were reduced and as trade policy became more transparent; essentially, however, the structure of protection did not change all that much: the primary and agricultural sectors and/or exportable sectors were penalized relative to manufacturing and importable sectors, respectively.

This overview of trade policy and trade policy reform points out several observations which are useful to this study. First, changes in the exchange rate policy have been made not as a complementary measure to trade reform but more as a response to a balance-of-payments crisis. Second, while changes in tariffs and the lifting of QRs in the 1980s were successful in lowering both protection and rates of dispersal among sectors, they did not change the structure of protection. Therefore, the bias against exports remained.

Since, the mark-up rate was abolished and sales taxes were unified in 1986, the EPR from 1986 onwards did not have to include the additional protective effect of indirect taxes.

8. The 2 and 6 percent export tax on coffee and fish exports, respectively, were abolished.

Table 2

Weighted Average Effective Protection Rates by Major Sectors:¹ 1983, 1985, 1986, 1988
(In percent)

	1983	SD ²	1985	SD	1986	SD	1988	SD
03-96 All sectors	49.8	115.7	46.3	101.1	36.9	71.2	33.1	61.8
Importables	103.6	137.7	97.4	116.6	76.7	77.9	70.0	64.3
Exportables	-10.5	17.4	-10.7	16.8	-7.5	14.6	-8.1	15.3
03-22 Agriculture, fishing and forestry	9.1	39.4	8.0	35.5	3.8	22.5	3.7	22.8
Importables	85.5	12.4	76.5	8.0	44.3	10.2	45.1	8.9
Exportables	-10.1	8.0	-9.2	9.3	-6.4	9.5	-6.7	9.6
23-27 Mining	-0.3	16.5	-1.3	14.8	-3.1	12.9	-4.2	13.1
Importables	27.7	0.5	23.6	1.5	18.2	4.6	17.3	5.0
Exportables	-9.9	2.6	-9.9	2.6	-10.4	2.7	-11.6	3.0
28-96 Manufacturing	75.3	133.2	70.5	117.3	57.7	79.8	51.7	67.7
Importables	108.0	142.2	102.1	122.6	82.9	79.2	75.0	64.3
Exportables	-11.2	27.0	-13.4	25.1	-8.9	21.0	-9.8	22.2

¹Weight used: FTVA.Qbj; EPRs were calculated using price comparison without duty drawback.

²Standard deviation.

Table 3

Weighted Effective Protection Rates by Major Sectors:¹ 1983, 1985, 1986, 1988
(In percent)

	1983	SD ²	1985	SD	1986	SD	1988	SD
03-96 All sectors	52.8	113.7	49.3	97.4	39.8	69.1	36.3	59.2
Importables	103.6	137.7	97.4	116.6	76.7	77.9	70.0	64.3
Exportables	-4.0	9.5	-4.5	9.8	-1.4	10.4	-1.4	10.4
03-22 Agriculture, fishing and forestry	10.3	38.9	9.2	35.0	5.0	21.9	5.2	22.1
Importables	85.5	12.4	76.5	8.0	44.3	10.2	45.1	8.9
Exportables	-8.7	8.0	-7.8	9.4	-4.9	9.4	-4.9	9.4
23-27 Mining	7.2	12.0	6.1	10.2	4.8	8.2	4.5	7.9
Importables	27.7	0.5	23.6	1.5	18.2	4.6	17.3	5.0
Exportables	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
28-96 Manufacturing	79.2	130.0	74.1	114.1	61.2	76.4	55.5	63.6
Importables	108.0	142.2	102.1	122.6	82.9	79.2	75.0	64.3
Exportables	3.1	7.5	0.1	9.1	3.8	10.6	3.8	10.6

¹Weight used : FTVA.Qbj ; EPRs were calculated using price comparison with duty drawback.

²Standard deviation.

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Trade Reform in the 1990s

THE objectives of this chapter are first, to review major attempts at trade reform (E.O.s 470 and 8) in the 1990s and the progress of the import liberalization program (ILP); second, to look into the effects of the E.O.s on the implicit rate and effective protection rate (EPR) structures; and third, to discuss briefly the lifting of foreign exchange controls in 1992 and its effect on the trade reform process.

TARIFF REFORM AND IMPORT LIBERALIZATION IN THE 1990S

E.O. 470, issued on July 20, 1991, became the second most significant tariff reform initiative in the country by providing for further tariff changes since the completion of the TRP in 1985. It was the outcome of a one-year consultation by the government with the private sector which opposed the implementation of E.O. 413 because the tariff cuts were to be implemented over a period of one year only. E.O. 470, which in effect spread the same tariff cuts over five years rather than one year, came six years after the TRP of 1981. It might have come earlier but would have been redundant since the scope and strength of import restrictions in 1985 were no different from those in 1970. The ILP gained momentum during the period 1986-1988; as of 1989, only 477 out of a total of 1,820 commodities were still being regulated.⁹ A new round of tariff cuts was seen as the next logical step to preserve the gains achieved by previous trade

9. See Table 1 in Chapter 1.

reforms, to sustain and to give credibility to the process of trade reform.

E.O. 470 made some policy gains as well as losses. *First*, E.O. 470 continued to move toward a more neutral tariff policy by a combination of reducing the number of commodity lines¹⁰ with high tariffs and increasing the number of commodity lines with low tariff; nevertheless, the clustering of rates occurred only in the range from 10 to 30 percent (Table 4). Under the 40 percent tariff level, 480 lines in 1991 were to be reduced to 0 by 1995; and for commodities with 50 percent rates, 1,177 lines in 1991 were to be trimmed to 208 by 1995. The changes along the three other lower tariff levels are, (1), in the 10 percent tariff level, the number of lines will be increased from

Table 4
Frequency Distribution of Tariff Rates, E.O. 470

Rates in percent	1991	1992	1993	1994	1995
0	45	43	43	43	43
3	277	277	304	304	285
5	11	11	16	16	16
10	1,590	1,972	1,949	1,958	1,958
15	3	3	6	32	26
20	972	744	887	918	1,041
25	30	30	103	133	19
30	973	843	1,041	1,004	1,962
35	-	102	47	620	-
40	480	385	662	31	-
45	-	622	-	-	-
50	1,177	526	500	499	208
Total	5,558	5,558	5,558	5,558	5,558

Source of basic data: *Tariff and Customs Code*, August 1991.

10. Each line is based on the eight-digit Harmonized System (HS) Code.

1,590 in 1991 to 1,958 by 1995; (2), in the 20 percent level, from 972 lines to 1,041; and (3) in the 30 percent level, from 973 lines to 1,962.

Second, E.O. 470 broke a policy commitment provided in the TRP of 1981 by breaching the 10 percent floor rate: 344 commodities (raw materials) were to continue receiving 0, 3, and 5 percent by 1995. Among the total of 43 lines under 0 percent, 16 are fertilizers, 10 are wood products, nine are machinery and mechanical appliances/parts for tractors and power tillers, two are mineral products, and one is for rattan. Included under 3 percent with a total of 285 lines are 28 agricultural products, 15 mineral products, 52 organic chemicals, 10 tanning or dyeing extracts, 24 raw hides and skins and leather, 19 wood pulp, 20 vegetable textile fiber and man-made staple fibers, and 15 pig iron and other ferrous products. Under 5 percent, nine are fertilizers and five are cotton.

It is interesting to note that by 1995, the second highest tariff rate will be 30 percent with 1,962 lines and none for the 40 percent level; nevertheless, there will be 208 lines for the highest 50 percent, distributed as follows: fruits and nuts, 17 commodities; rice, four; vegetable fats and oils, 12; sugar and confectionery, nine; fruit and vegetable juices, nine; beverages and spirits, 13; tobacco and manufactured tobacco substitutes, 14; perfumery, cosmetic and toilet preparations, 10; articles of leather, 21; plywood, six; footwear, 25; and tiles and marbles, seven. Although all of these items except rice and plywood have been liberalized in 1992, a 50 percent tariff on them is considered prohibitive by any standard.

The progress of the ILP in those same years was minimal. In 1990, the QR on only one commodity (i.e., power generating machinery) was lifted. In 1991, QRs on a total of 16 commodities were lifted, mostly telecommunications equipment. The ILP in 1992 gained headway as QRs on 173 commodities from lists A, B and C were lifted: those in list B covered processed food products (PSCC 01-06), 65 lines, and motor vehicles (PSCC 78), 17 lines; those in list C covered processed food products (01-04), 18 lines, and medicinal and pharmaceutical products (PSCC 54), 21 lines (Table 5). As of December 1992, QRs remained for 275 commodities; however, by June 1993, most of the gains in 1992 were practically reversed because

Table 5

The Import Liberalization Program: 1990-1993

PSCC	1990	1991	1992				E.O. 8 ¹	1993 ²
			A	B	C	Total		
00 Live animals for food			1		15	16	6	15
01 Meat and preparations				29	16	45	32	43
03 Fish and preparations				33		33	29	
04 Cereals and preparations					3	3	3	1
06 Sugar, honey and preparations				3		3	1	
08 Feeding stuffs for animals								22
54 Medicinal and pharmaceutical products					21	21		
64 Paper and paperboard		1						
71 Power generating machinery	1							
72 Specialized industrial machinery and equipment				1		1	1	
74 Non-electric machinery				2		2	6	
76 Telecommunications equipment		9		2		2		

Table 5 *continued*

PSCC	1990	1991	1992				E.O. 8 ¹	1993 ²
			A	B	C	Total		
77 Electric machinery and apparatus		3		18		18	11	
78 Motor vehicles			5	17		22	24	
79 Railway vehicles, aircraft and ships					4	4		
89 Miscellaneous manufactures					1	1		
90 Commodities, n.e.c.		3						
94 Dogs					1	1		
95 Sidearm parts, n.e.s, e.g., sword blades,hilts, guards, handles, scabbards and sheaths					1	1		
Total	1	16	6	105	62	173	113	81
Remaining items not liberalized	471	449				275		356

¹The frequency distribution captures only commodities which were tariffied by E.O. 8.

²Frequency distribution of commodities regulated by M.O. 95 dated February 1993.

Source: De Dios, L. "Review of the Remaining Import Restrictions." (PIDS Research Paper Series No. 94-08) and E.O. No. 8.

QRs on 81 items were reimposed by M.O. 95. QRs on 356 commodities remained as of June 1993, broken down into 190 lines from list B (i.e., cars, trucks and diesel engine, motorcycles, chemicals, fertilizers, coffee, used tires, potatoes, onions and cabbage); and 99 lines from list C.¹¹

E.O. 8, issued on July 1992, provided tariffication for 153 commodities and tariff realignment for 48 commodities, in anticipation of the lifting of QRs.¹² The replacement of QRs with tariffs is argued to have some advantages. First, it makes trade policy more transparent and transfers private rents to government as revenues. Second, it links domestic prices with world prices such that changes in the latter can be transmitted to the domestic economy; this makes local producers sensitive to and conscious of price competitiveness. The second to the last column of Table 5 shows that there were 113 commodities (by the Philippine Standard Commodity Classification [PSCC] count) liberalized in 1992 but were tariffied by E.O. 8. Table 6 shows the details. In general, almost all the commodities received a tariff adjustment equivalent to twice their existing rates in 1992 as provided for by E.O. 470. For commodity groups 72 (specialized industrial machinery and equipment) and 77 (electric machinery and apparatus), the tariff equivalents were more than twice their existing rates in 1992: from an average of 45 and 43 percent under E.O. 470 to an average of 100 and 91 percent under E.O. 8, respectively. In a sharp departure from the TRP of 1981 and E.O. 470, E.O. 8 breached the 50 percent ceiling rate and granted rates from 60 percent to a maximum of 100 percent time-bound for five years starting August 1992 (Table 7). In 1992, the following commodities were levied 60 percent tariffs: processed meat products, 31 lines; fish, live or frozen, 28 lines; public transport vehicles and trucks and its parts, 16 lines. Those with 75 percent tariffs were corn, sugar and cereal grains, for a total of seven items. Those with 80

11. De Dios, L. (1994).

12. This count is based on the HS code.

Table 6
Tarrification under E.O. No. 8

PSCC	Description	Number of Lines	Average Tariff Rate in E.O. 470 in 1992 (%)	Average Tariff Rate in E.O. 8 in 1992 (%)
00	Live animals for food	6	28	57
01	Meat and preparations	32	35	71
03	Fish and preparations	29	38	82
04	Cereals and preparations	3	23	75
06	Sugar, honey and preparations	1	50	75
72	Specialized industrial machinery and equipment	1	45	100
74	Non-electric machinery	6	28	60
77	Electric machinery and apparatus	11	43	91
78	Motor vehicles	24	30	56
Total		113		

Sources of basic data: Executive Order Nos. 470 and 8.

percent tariffs totalling 12 items covered duck meat, washing machines and electrical machinery, and equipment and parts. Under the 100 percent level were 68 lines including chicken, smoked and dried meat (13 items); dried fish, crustaceans, mollusks (31 items); meat, fish and crustacean preparations (11 items); and electrical fans, air conditioners, refrigerators, sewing machines and beverage coolers (10 items). Among the 68 commodities that enjoyed 80 percent tariffs in 1993 with QRs reimposed by M.O. 95 were meat and meat preparation and live animals; by 1994, their rates will still be at a high 60 percent.

In general, E.O. 8 has neither negated nor delayed the effects of E.O. 470 (Tables 4 and 7) in that the rate structures of both E.O.s will be similar by 1995. It has, although temporarily, disturbed the relative protection among industries in the interim years 1992, 1993 and

Table 7
Frequency Distribution of Tariff Rates, E.O. No. 8

Rate in percent	1992	1993	1994	1995	1996
0	43	43	43	43	43
3	279	306	306	287	287
5	11	16	16	16	16
10	1,973	1,950	1,959	1,960	1,960
15	3	6	32	26	26
20	743	886	915	1,037	1,040
25	30	103	133	20	19
30	769	964	927	1,988	2,004
35	101	48	578	14	-
40	381	615	95	-	-
45	580	-	14	2	-
50	526	568	514	213	211
55	-	14	2	-	-
60	80	3	72	-	-
65	-	2	-	-	-
70	-	14	-	-	-
75	7	-	-	-	-
80	12	68	-	-	-
100	68	-	-	-	-
Total*	5,606	5,606	5,606	5,606	5,606

* The total number of HS lines should be 5,610 but there are four lines with specific rates which are not included.

Sources of basic data: E.O. 8 and *Tariff and Customs Code*, August 1991.

1994. There have been previous similar policies of tariffication, such as R.A. 6647 in 1987, but the reimposition of QRs after levying higher tariffs is damaging to the whole process of trade policy reform because it reflects the absence of strong commitment and hence casts doubt on the credibility of the reform process. Once this kind of pattern is discerned or established by economic agents, necessary adjustments to reform would not be forthcoming.

EFFECT ON IMPLICIT TARIFFS AND EFFECTIVE PROTECTION

The effect of E.O. 470 on implicit tariffs can be seen in Table 8. The weighted average implicit rate for the entire economy exhibited a general downward trend, from 19.3 percent in 1990 to 16 percent in 1995. Likewise, the entire manufacturing sector and all its major groups posted a similar downward trend. Nevertheless, all the primary sectors except logging and other forestry activities posted increases in their implicit rates in the first two years after E.O. 470 but their respective rates in the final year 1995 were still lower than their pre-E.O. 470 levels.

QRs remain in some sectors; therefore, it is still meaningful to look at implicit rates using price comparisons (Table 9). Implicit rates from price comparisons are higher than implicit rates from tariffs¹³ in sectors where QRs remain and continue to provide the more binding form of protection. The sectors with higher implicit rates from price comparisons relative to their implicit rates from book rates are agriculture, food processing, chemicals and chemical products, nonmetallic mineral products and machinery including electrical and transport equipment. For agriculture, it was 12.8 percent and 11.1 percent relative to 9.3 percent and 8.8 percent in 1990 and 1995, respectively; for chemicals and chemical products, it was 39.3 percent and 34.5 percent relative to 27.5 percent and 20.2 percent in 1990 and 1995, respectively; for nonmetallic mineral products it was 79.5 percent and 79.4 percent relative to 23.7 percent and 18.7 percent in 1990 and 1995, respectively; and for machinery including electrical and transport equipment, it was 23.3 percent and 16.9 percent relative to 18.6 percent and 12 percent in 1990 and 1995, respectively.¹⁴

13. Although QRs exert an upward pressure on prices, prices increase in response to other factors. It would be quite difficult to isolate price changes solely from QRs. Another aspect to consider is that price comparisons capture quality differences and other heterogeneous features in products.

14. Generally, when implicit rates from tariffs are similar to those from price comparisons, it can be assumed that there are no QRs or that QRs have been lifted in these sectors. Nevertheless, the computation of implicit rates based on price comparisons was only possible for seven sectors.

Table 8

Weighted Average Implicit Tariffs Using Book Rates:¹ 1990-1995
(In percent)

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
03-96 All sectors	19.3	23.1	19.6	23.7	18.7	22.8	17.7	21.8	16.9	21.1	16.0	20.5
Importables	38.8	12.9	39.4	14.1	37.6	13.6	35.8	13.1	34.2	13.0	32.5	13.2
Exportables	-2.5	6.6	-2.5	6.6	-2.5	6.6	-2.5	6.6	-2.5	6.6	-2.5	6.6
03-22 Agriculture, fishing and forestry	3.3	17.3	6.0	22.0	5.1	20.2	4.1	18.5	3.2	16.8	2.3	15.1
Importables	33.1	10.6	46.6	7.9	42.1	6.8	37.5	5.8	33.1	4.5	28.6	3.3
Exportables	-4.3	8.2	-4.3	8.2	-4.3	8.2	-4.3	8.2	-4.3	8.2	-4.3	8.2
23-27 Mining	4.3	7.6	5.2	10.6	5.2	10.6	5.2	10.6	5.2	10.6	5.2	10.6
Importables	16.7	4.0	20.3	11.5	20.3	11.5	20.3	11.6	20.3	11.6	20.3	11.6
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-96 Manufac- turing	29.1	20.9	28.0	21.1	27.0	20.5	26.0	19.8	25.1	19.4	24.2	19.1
Importables	40.1	12.7	38.6	14.4	37.2	14.0	35.8	13.8	34.6	13.7	33.3	14.0
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
03-13 Agriculture	9.3	14.9	14.3	21.9	12.9	19.7	11.5	17.6	10.1	15.4	8.8	13.3
Importables	30.2	9.2	46.4	7.8	41.9	6.7	37.3	5.6	32.9	4.3	28.4	3.0
Exportables	0.0	0.6	0.0	0.5	0.0	0.5	0.0	0.3	0.0	0.3	0.0	0.3

Table 8 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
19-20 Fishing	5.4	14.6	6.2	16.5	5.6	14.8	5.0	13.2	4.4	11.5	3.7	9.9
Importables	42.9	9.5	49.8	0.1	44.9	0.1	39.9	0.1	34.9	0.1	29.9	0.1
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-22 Logging and other forestry activities	-17.7	11.7	-18.0	10.0	-18.1	9.6	-18.2	9.2	-18.2	8.8	-18.3	8.5
Importables	41.2	0.0	32.1	0.0	30.2	0.0	28.2	0.0	26.3	0.0	24.3	0.0
Exportables	-20.0	0.0	-20.0	0.0	-20.0	0.0	-20.0	0.0	-20.0	0.0	-20.0	0.0
28-45 Food processing	36.8	21.1	36.8	21.1	35.5	20.4	34.2	20.0	33.0	19.7	31.7	19.7
Importables	48.0	38.4	48.1	39.9	46.4	38.8	44.7	37.5	43.0	36.4	41.4	35.5
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46-50 Beverages and tobacco	26.5	25.0	26.5	25.0	26.2	24.7	25.9	24.4	25.6	24.2	25.3	24.0
Importables	50.0	0.0	50.0	0.0	49.4	1.1	48.8	2.3	48.3	3.4	47.7	4.6
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51-55 Textile and footwear	8.8	16.4	6.6	12.6	6.6	12.6	5.3	10.0	5.3	10.0	5.0	9.5
Importables	39.2	1.4	29.6	5.3	29.6	5.3	23.6	3.5	23.6	3.5	22.4	3.9

Table 8 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56-58 Wood and wood products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Importables	-	-	-	-	-	-	-	-	-	-	-	-
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59-66 Paper, rubber, leather and plastic products	27.3	10.7	28.4	11.4	26.6	10.7	24.6	10.3	23.1	9.8	21.6	9.5
Importables	32.4	7.2	33.6	8.0	31.4	7.4	29.1	7.6	27.4	7.4	25.5	7.3
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67-75 Chemicals and chemical products	27.5	12.7	21.9	10.6	20.6	9.4	20.4	9.4	20.3	9.5	20.2	9.5
Importables	27.5	12.7	21.9	10.6	20.6	9.4	20.4	9.4	20.3	9.5	20.2	9.5
Exportables	-	-	-	-	-	-	-	-	-	-	-	-
76-79 Nonmetallic mineral products	23.7	7.1	19.1	6.8	19.4	5.3	19.2	4.5	19.0	3.6	18.7	2.9
Importables	24.0	4.6	19.3	5.7	19.6	4.7	19.4	3.8	19.2	2.9	19.0	2.0
Exportables	0.0	27.9	0.0	29.2	0.0	43.6	0.0	42.1	0.0	40.8	0.0	40.2

Table 8 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
80-82 Basic metals and metal products	26.9	3.5	26.1	3.5	25.8	3.4	22.8	3.3	21.1	3.0	19.6	2.9
Importables	27.3	1.0	26.5	1.4	26.2	1.1	23.2	1.6	21.4	1.4	19.9	1.5
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83-91 Machinery including electrical and transport equipment	18.6	12.0	16.0	11.9	13.0	10.8	13.0	9.5	12.7	9.0	12.0	8.0
Importables	24.1	7.3	20.8	9.1	16.9	9.3	16.9	7.1	16.5	6.5	15.5	5.3
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92-96 Miscellaneous manufactures	13.4	16.9	11.2	14.2	10.6	13.3	10.0	12.5.	9.3	11.6	8.7	10.8
Importables	29.4	8.9	24.7	7.9	23.3	7.1	21.9	6.3	20.5	5.6	19.1	4.9
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

¹Weight used : FTVA.Qbj ; all implicit tariffs are net of indirect taxes.

²Standard deviation.



Table 9

Weighted Average Implicit Tariffs Using Price Comparisons:¹ 1990-1995
(In percent)

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
03-96 All sectors	20.2	27.4	20.3	27.6	19.5	26.9	18.6	26.3	17.9	25.8	17.2	25.4
Importables	40.5	22.5	40.7	22.8	39.2	22.6	37.6	22.6	36.2	22.7	34.8	23.0
Exportables	-2.5	6.6	-2.5	6.6	-2.5	6.6	-2.5	6.6	-2.5	6.6	-2.5	6.6
03-22 Agriculture, fishing and forestry	5.0	20.2	6.0	22.0	5.4	20.8	4.7	19.7	4.1	18.7	3.5	17.8
Importables	41.9	8.3	46.6	7.9	43.5	7.8	40.5	8.3	37.5	9.2	34.5	10.5
Exportables	-4.3	8.2	-4.3	8.2	-4.3	8.2	-4.3	8.2	-4.3	8.2	-4.3	8.2
23-27 Mining	4.3	7.6	5.2	10.6	5.2	10.6	5.2	10.6	5.2	10.6	5.2	10.6
Importables	16.7	4.0	20.3	11.5	20.3	11.5	20.3	11.6	20.3	11.6	20.3	11.6
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-96 Manufac- turing	29.6	27.3	29.2	27.3	28.2	26.9	27.2	26.5	26.4	26.2	25.5	26.0
Importables	40.8	23.9	40.2	24.2	38.9	24.1	37.5	24.1	36.3	24.2	35.1	24.4
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 9 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
03-13 Agriculture	12.8	19.8	14.3	21.9	13.5	20.7	12.7	19.7	11.9	18.7	11.1	17.8
Importables	41.6	7.8	46.4	7.8	43.8	7.9	41.1	8.6	38.6	9.7	36.1	11.2
Exportables	0.0	0.6	0.0	0.5	0.0	0.5	0.0	0.3	0.0	0.3	0.0	0.3
19-20 Fishing	5.4	14.6	6.2	16.5	5.6	14.8	5.0	13.2	4.4	11.5	3.7	9.9
Importables	42.9	9.5	49.8	0.1	44.9	0.1	39.9	0.1	34.9	0.1	29.9	0.1
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-22 Logging and other forestry activities	-17.7	11.7	-18.0	10.0	-18.1	9.6	-18.2	9.2	-18.2	8.8	-18.3	8.5
Importables	41.2	0.0	32.1	0.0	30.2	0.0	28.2	0.0	26.3	0.0	24.3	0.0
Exportables	-20.0	0.0	-20.0	0.0	-20.0	0.0	-20.0	0.0	-20.0	0.0	-20.0	0.0
28-45 Food processing	25.1	19.2	25.2	19.2	23.9	17.7	22.7	16.4	21.5	15.2	20.3	14.2
Importables	32.8	39.7	32.8	39.9	31.2	39.2	29.6	38.7	28.0	38.3	26.5	38.1
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46-50 Beverages and tobacco	26.5	25.0	26.5	25.0	26.2	24.7	25.9	24.4	25.6	24.2	25.3	24.0
Importables	50.0	0.0	50.0	0.0	49.4	1.1	48.8	2.3	48.3	3.4	47.7	4.6
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 9 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
51-55 Textile and footwear	8.8	16.4	6.6	12.6	6.6	12.6	5.3	10.0	5.3	10.0	5.0	9.5
Importables	39.2	1.4	29.6	5.3	29.6	5.3	23.6	3.5	23.6	3.5	22.4	3.9
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56-58 Wood and wood products	0.0											
Importables	—	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59-66 Paper, rubber, leather and plastic products	27.3	10.7	28.4	11.4	26.6	10.7	24.6	10.3	23.1	9.8	21.6	9.5
Importables	32.4	7.2	33.6	8.0	31.4	7.4	29.1	7.6	27.4	7.4	25.5	7.3
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67-75 Chemicals and chemical products	39.3	9.7	36.3	8.9	34.9	9.6	34.7	10.0	34.7	10.1	34.5	10.4
Importables	39.3	9.7	36.3	8.9	34.9	9.6	34.7	10.0	34.7	10.1	34.5	10.4
Exportables	—	—	—	—	—	—	—	—	—	—	—	—

Table 9 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
76-79 Nonmetallic												
mineral products	79.5	20.4	79.7	19.7	80.1	18.2	79.8	18.7	79.6	19.2	79.4	19.7
Importables	80.5	9.1	80.7	9.0	81.1	9.7	80.8	10.6	80.6	11.5	80.4	12.4
Exportables	0.0	27.9	0.0	29.2	0.0	43.6	0.0	42.1	0.0	40.8	0.0	40.2
80-82 Basic metals and												
metal products	26.9	3.5	26.1	3.5	25.8	3.4	22.8	3.3	21.1	3.0	19.6	2.9
Importables	27.3	1.0	26.5	1.4	26.2	1.1	23.2	1.6	21.4	1.4	19.9	1.5
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83-91 Machinery												
including electrical												
and transport												
equipment	23.3	28.1	20.7	28.5	17.9	28.5	17.6	28.4	17.2	28.3	16.9	28.2
Importables	30.2	28.5	26.9	29.7	23.2	30.5	22.8	30.4	22.4	30.4	22.0	30.4
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92-96 Miscellaneous												
manufactures	13.4	16.9	11.2	14.2	10.6	13.3	10.0	12.5	9.3	11.6	8.7	10.8
Importables	29.4	8.9	24.7	7.9	23.3	7.1	21.9	6.3	20.5	5.6	19.1	4.9
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

¹Weight used : FTVA.Qbj ; all implicit tariffs are net of indirect taxes.

²Standard deviation.

E.O. 470 has also brought down the dispersal of implicit rates in the economy: the standard deviation for implicit rates from book rates and price comparisons dropped from 23 percent and 27.4 percent in 1990 to 20 percent and 25.4 percent in 1995, respectively. The changes in the implicit rates present only one aspect of protection; for overall protection from tariffs, it would be more meaningful to look at the change in the EPR structure.

From 1990 to 1995, there is a general downward trend in EPRs for the entire economy whether using book rates or price comparisons (Tables 10 and 11).¹⁵ EPRs using book rates drop from 26.2 percent in 1990 to 21.8 percent in 1995; there is also a decrease in their standard deviation, from 45.3 percent to 21.8 percent for the same period. EPRs using price comparisons decrease from 32.5 percent in 1990 to 29 percent in 1995 while the dispersal rate drops from 61.7 to 57.3 percent. The drop in EPR from the book rates is greater than the decrease in EPR from price comparisons, about 17 percent relative to 11 percent, because E.O. 470 contained more substantial changes in tariff rates while the import liberalization program in 1990, 1991 and 1992 showed very little progress in terms of lifting QRs. Exceptions to this downward trend are wood and wood products whose EPR increased slightly from 19 percent in 1990 to 24 percent in 1995 and nonmetallic mineral products whose EPR using price comparisons increased from 162 percent in 1990 to 174 percent in 1995.

The impact of E.O. 8 on the overall implicit tariff rate and EPR is very minimal since it affects only 201 lines out of 5,606 lines. The significance of E.O. 8 is not in the number of lines it covers but in its provision of policy commitment, credibility, and continuity. Its more salient effect is obviously to create a greater dispersal of rates, both implicit tariff and EPRs, among sectors.

The disparity between the EPRs of importables and exportables is very glaring and becomes more pronounced for certain sectors when

15. The EPRs in both tables were computed assuming that there are no duty drawbacks for exportable sectors. This is evident from the negative EPRs of exportable sectors given that their implicit rates on their outputs and inputs are zero.

Table 10

Weighted Average Effective Protection Rates Using Book Rates:¹ 1990-1995
(In percent)

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
0-96 All sectors	26.2	45.3	27.3	44.4	25.9	41.9	24.4	38.7	23.2	36.9	21.8	34.9
Importables	57.0	40.7	57.8	39.3	55.1	36.1	52.0	32.0	49.6	29.9	47.0	27.9
Exportables	-8.3	15.5	-6.8	15.7	-6.7	15.4	-6.5	15.1	-6.4	14.8	-6.4	14.6
03-22 Agriculture, fishing and forestry	1.8	19.6	5.6	24.7	4.6	22.8	3.6	20.8	2.6	19.0	1.6	17.2
Importables	35.3	11.5	51.1	9.3	46.1	8.0	41.1	6.8	36.1	5.4	31.2	4.0
Exportables	-6.7	9.6	-5.9	9.4	-5.9	9.4	-5.9	9.4	-5.9	9.4	-5.8	9.4
23-27 Mining	-4.2	13.1	0.5	15.2	0.5	15.2	0.5	15.2	0.5	15.2	0.5	15.2
Importables	17.3	5.0	23.0	14.6	23.0	14.6	23.0	14.6	23.0	14.6	23.0	14.6
Exportables	-11.6	3.0	-7.3	1.7	-7.2	1.7	-7.2	1.7	-7.2	1.7	-7.2	1.7
28-96 Manufac- turing	41.6	46.4	41.0	39.0	39.3	35.3	37.4	30.2	35.9	33.0	34.3	34.3
Importables	61.2	36.8	59.5	24.8	57.2	18.3	54.3	3.1	52.3	18.5	50.0	23.5
Exportables	-10.4	22.6	-8.2	23.2	-8.0	22.7	-7.4	22.0	-7.3	21.6	-7.1	21.2



Table 10 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
03-13 Agriculture	9.3	15.9	15.0	23.7	13.5	21.3	12.0	19.0	10.5	16.7	9.1	14.4
Importables	31.7	9.4	49.8	7.8	44.9	6.7	40.0	5.6	35.2	4.2	30.4	2.8
Exportables	-0.7	1.0	-0.5	1.0	-0.5	1.0	-0.4	0.9	-0.4	0.9	-0.4	0.9
19-20 Fishing	3.4	17.4	6.0	20.3	5.3	18.2	4.5	16.2	3.8	14.2	3.0	12.2
Importables	48.3	9.1	59.4	5.3	53.3	4.7	47.2	4.1	41.1	3.5	35.0	2.9
Exportables	-3.0	2.0	-1.6	0.8	-1.6	0.8	-1.6	0.8	-1.6	0.8	-1.6	0.8
21-22 Logging and other forestry activities	-22.3	12.7	-21.8	10.8	-21.8	10.4	-21.9	10.0	-22.0	9.7	-22.1	9.3
Importables	41.7	0.0	32.6	0.0	30.6	0.0	28.7	0.0	26.7	0.0	24.7	0.0
Exportables	-24.8	0.0	-23.9	0.0	-23.9	0.0	-23.9	0.0	-23.9	0.0	-23.9	0.0
28-45 Food processing	43.6	49.1	42.7	48.5	41.0	44.7	39.2	41.1	37.6	38.6	36.0	36.4
Importables	60.3	68.6	59.2	58.3	56.8	52.9	54.4	45.7	52.2	50.0	49.9	52.0
Exportables	-11.2	25.0	-11.3	26.4	-10.9	25.5	-10.5	24.7	-10.1	24.0	-9.8	23.3
46-50 Beverages and tobacco	45.1	56.0	43.8	58.7	43.5	58.5	43.1	58.4	42.7	58.2	42.3	58.1
Importables	97.1	12.9	98.2	11.8	97.5	13.3	96.8	14.7	96.0	16.1	95.3	17.6
Exportables	-13.5	3.7	-17.6	8.5	-17.6	8.5	-17.6	8.5	-17.6	8.5	-17.6	8.5

Table 10 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
76-79 Nonmetallic												
mineral products	39.1	22.3	39.3	17.3	41.3	14.3	40.7	12.5	40.1	10.9	39.6	9.7
Importables	40.0	11.6	40.0	13.1	42.0	10.9	41.5	8.7	40.9	6.5	40.4	4.3
Exportables	-28.6	102.9	-18.4	97.7	-20.0	173.5	-20.0	169.7	-20.0	166.1	-20.0	164.4
80-82 Basic metals and												
metal products	72.2	12.3	78.3	12.4	77.4	12.4	66.4	11.2	60.1	10.2	54.7	9.4
Importables	73.7	4.2	79.8	4.5	78.9	4.7	0.0	67.9	0.0	61.4	55.8	3.8
Exportables	-20.8	0.0	-14.7	0.0	-14.7	0.0	-14.7	0.0	-14.7	0.0	-14.7	0.0
83-91 Machinery including												
electrical and transport												
equipment	35.5	29.5	32.1	31.0	24.8	30.8	24.9	27.8	24.2	26.9	22.4	25.2
Importables	46.8	23.9	42.3	28.4	32.8	30.9	32.9	27.0	31.9	26.1	29.7	24.5
Exportables	-2.4	0.0	-1.8	0.0	-1.8	0.0	-1.8	0.0	-1.8	0.0	-1.8	0.0
92-96 Miscellaneous												
manufactures	39.5	52.4	37.6	49.4	34.8	45.7	32.0	42.0	29.3	38.4	26.5	34.8
Importables	90.8	18.3	85.2	22.3	79.1	19.1	73.0	16.0	66.9	12.9	60.8	9.9
Exportables	-3.4	0.0	-2.3	0.0	-2.3	0.0	-2.2	0.0	-2.2	0.0	-2.1	0.0

¹Weight used : FTVA.Qbj ; EPRs were calculated without duty drawback.

²Standard deviation.

Table 11

Weighted Average Effective Protection Rates Using Price Comparisons:¹ 1990-1995
(In percent)

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
03-96 All sectors	32.5	61.7	33.9	62.9	32.6	61.3	31.2	59.5	30.1	58.4	29.0	57.3
Importables	69.0	64.6	70.2	66.9	67.8	65.5	65.0	64.0	62.8	63.3	60.6	62.7
Exportables	-8.3	15.5	-6.8	15.7	-6.7	15.4	-6.5	15.1	-6.4	14.8	-6.4	14.6
03-22 Agriculture, fishing and forestry	3.8	22.8	5.6	24.7	4.9	23.4	4.2	22.2	3.6	21.1	2.9	20.1
Importables	45.1	9.0	51.1	9.3	47.7	9.0	44.3	9.4	41.0	10.3	37.7	11.7
Exportables	-6.7	9.6	-5.9	9.4	-5.9	9.4	-5.9	9.4	-5.9	9.4	-5.8	9.4
23-27 Mining	-4.2	13.1	0.5	15.2	0.5	15.2	0.5	15.2	0.5	15.2	0.5	15.2
Importables	17.3	5.0	23.0	14.6	23.0	14.6	23.0	14.6	23.0	14.6	23.0	14.6
Exportables	-11.6	3.0	-7.3	1.7	-7.2	1.7	-7.2	1.7	-7.2	1.7	-7.2	1.7
28-96 Manufac- turing	50.7	68.3	51.5	66.3	50.0	64.4	48.0	62.2	46.6	63.8	45.1	64.6
Importables	73.7	65.4	74.1	63.0	71.9	61.2	69.0	59.3	67.0	62.5	64.9	64.5
Exportables	-10.4	22.6	-8.2	23.2	-8.0	22.7	-7.4	22.0	-7.3	21.6	-7.1	21.2
03-13 Agriculture	13.2	21.4	15.0	23.7	14.2	22.5	13.3	21.4	12.5	20.4	11.7	19.6
Importables	44.4	8.5	49.8	7.8	47.0	8.3	44.3	9.4	41.6	10.8	39.0	12.6
Exportables	-0.7	1.0	-0.5	1.0	-0.5	1.0	-0.4	0.9	-0.4	0.9	-0.4	0.9

Table 11 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
19-20 Fishing	3.4	17.4	6.0	20.3	5.3	18.2	4.5	16.2	3.8	14.2	3.0	12.2
Importables	48.3	9.1	59.4	5.3	53.3	4.7	47.2	4.1	41.1	3.5	35.0	2.9
Exportables	-3.0	2.0	-1.6	0.8	-1.6	0.8	-1.6	0.8	-1.6	0.8	-1.6	0.8
21-22 Logging and other forestry activities	-22.3	12.7	-21.8	10.8	-21.8	10.4	-21.9	10.0	-22.0	9.7	-22.1	9.3
Importables	41.7	0.0	32.6	0.0	30.6	0.0	28.7	0.0	26.7	0.0	24.7	0.0
Exportables	-24.8	0.0	-23.9	0.0	-23.9	0.0	-23.9	0.0	-23.9	0.0	-23.9	0.0
28-45 Food processing	30.8	50.0	30.0	49.6	28.3	45.3	26.7	41.2	25.2	38.1	23.6	35.3
Importables	43.7	100.3	42.6	98.2	40.3	95.8	38.1	92.8	35.9	95.7	33.8	97.3
Exportables	-11.2	25.0	-11.3	26.4	-10.9	25.5	-10.5	24.7	-10.1	24.0	-9.8	23.3
46-50 Beverages and tobacco	45.1	56.0	43.8	58.7	43.5	58.5	43.1	58.4	42.7	58.2	42.3	58.1
Importables	97.1	12.9	98.2	11.8	97.5	13.3	96.8	14.7	96.0	16.1	95.3	17.6
Exportables	-13.5	3.7	-17.6	8.5	-17.6	8.5	-17.6	8.5	-17.6	8.5	-17.6	8.5

Table 11 continued

	1999-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
51-55 Textile and footwear												
	5.2	61.2	5.1	44.6	5.1	44.6	1.9	35.2	1.9	35.2	0.8	33.0
Importables	116.4	25.8	87.5	6.6	87.5	6.6	66.7	6.4	66.7	6.4	61.6	4.1
Exportables	-26.9	5.8	-18.8	4.9	-18.8	4.9	-16.9	4.5	-16.9	4.5	-16.8	4.3
56-58 Wood and wood products												
	18.9	11.3	23.5	10.7	23.5	10.7	23.5	10.7	23.5	10.7	23.6	10.7
Importables	-	-	-	-	-	-	-	-	-	-	-	-
Exportables	18.9	11.3	23.5	10.7	23.5	10.7	23.5	10.7	23.5	10.7	23.6	10.7
59-66 Paper, rubber, leather and plastic products												
	110.6	92.0	122.7	102.9	113.3	96.5	102.4	85.8	94.8	81.2	85.5	72.6
Importables	134.9	88.2	149.7	99.5	138.5	93.3	125.6	82.1	116.6	77.8	105.6	69.0
Exportables	-21.7	6.6	-23.8	4.1	-23.8	4.1	-23.8	4.1	-23.8	4.1	-23.8	4.1
67-75 Chemicals and chemical products												
	108.9	79.1	103.6	87.1	99.2	88.2	98.3	88.8	98.1	89.0	97.6	89.3
Importables	108.9	79.1	103.6	87.1	99.2	88.2	98.3	88.8	98.1	89.0	97.6	89.3
Exportables	—	—	—	—	—	—	—	—	—	—	—	—

Table 11 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
76-79 Nonmetallic												
mineral products	162.6	50.5	173.5	45.2	175.5	37.8	174.9	39.1	174.3	40.5	173.8	41.9
Importables	165.0	19.4	175.9	19.4	177.9	20.8	177.4	23.0	176.8	25.2	176.3	27.4
Exportables	-28.6	102.9	-18.4	97.7	-20.0	173.5	-20.0	169.7	-20.0	166.1	-20.0	164.4
80-82 Basic metals and metal products												
	72.2	12.3	78.3	12.4	77.4	12.4	66.4	11.2	60.1	10.2	54.7	9.4
Importables	73.7	4.2	79.8	4.5	78.9	4.7	67.7	4.8	61.3	4.1	55.8	3.8
Exportables	-20.8	0.0	-14.7	0.0	-14.7	0.0	-14.7	0.0	-14.7	0.0	-14.7	0.0
83-91 Machinery, including electrical and transport equipment												
	48.2	72.8	44.9	75.2	38.0	76.4	37.2	76.2	36.3	75.7	34.9	74.7
Importables	63.4	76.7	58.8	80.6	49.8	83.5	48.9	83.3	47.7	82.9	45.9	82.0
Exportables	-2.4	0.0	-1.8	0.0	-1.8	0.0	-1.8	0.0	-1.8	0.0	-1.8	0.0
92-96 Miscellaneous manufactures												
	39.5	52.4	37.6	49.4	34.8	45.7	32.0	42.0	29.3	38.4	26.5	34.8
Importables	90.8	18.3	85.2	22.3	79.1	19.1	73.0	16.0	66.9	12.9	60.8	9.9
Exportables	-3.4	0.0	-2.3	0.0	-2.3	0.0	-2.2	0.0	-2.2	0.0	-2.1	0.0

¹Weight used : FTVA.Qbj ; EPRs were calculated without duty drawback.

²Standard deviation.

they are calculated from price comparisons. The existing trade regime continues to confer greater protection to import-competing rather than export-producing activities, because, after all, tariffs and QRs are instruments contrived to protect import-substituting activities. As long as tariffs are greater than zero, the export bias will continue, unless subsidies to exports exist. It follows, then, that E.O. 470, which provides for tariff changes, is very limited in removing the bias of the existing trade regime. The provision of duty drawbacks is an attempt to mitigate this bias against exports: rebates (tax credits) on duties paid on imported inputs used to produce exports are given. This, in effect, reduces the penalty on exports. With rebates, the overall penalty on exports for the entire economy can be reduced by as much as 6 to 7 percent; however, there remains a penalty of 1.4 percent because of the 20 percent export tax on logs (Tables 12 and 13). For the entire exportable sector of manufacturing, the penalty rate ranging from 10.4 percent in 1990 to about 7 percent in 1995 will be reduced to zero; moreover, the sector will receive a protection of 4 percent.

The distribution of sectoral EPRs from tariffs and taxes and from price comparisons had only very minor changes for the lowest four and highest brackets; the EPRs were heavily concentrated around the extreme values of less than zero and greater than 100, with sparse distribution in the mid-range. There is an increase in the clustering of EPRs using book rates in the 31-40 percent and 51-60 percent range: from six and three in 1990 to 13 and 10 in 1995, respectively. The distribution of EPRs using price comparisons exhibited similar patterns (Table 14). The distribution appears to have been an inverted normal distribution curve. If trade reform is to achieve a more uniform protection across sectors, the more desirable distribution is a heavy concentration of EPRs around a median value with few at the extremes. In this particular instance, E.O. 470 has failed to bring about a more even distribution of protection across sectors.

Table 12

Weighted Average Effective Protection Rates Using Book Rates:¹ 1990-1995
(In percent)

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
03-96 All sectors	29.4	42.2	29.8	41.7	28.4	39.2	26.8	36.1	25.5	34.3	24.1	32.4
Importables	57.0	40.7	57.8	39.3	55.1	36.1	52.0	32.0	49.6	29.9	47.0	27.9
Exportables	-1.4	10.4	-1.4	10.4	-1.4	10.4	-1.4	10.4	-1.4	10.4	-1.4	10.4
03-22 Agriculture, fishing and forestry	3.2	18.9	6.4	24.3	5.4	22.4	4.4	20.5	3.4	18.6	2.4	16.8
Importables	35.3	11.5	51.1	9.3	46.1	8.0	41.1	6.8	36.1	5.4	31.2	4.0
Exportables	-4.9	9.4	-4.9	9.4	-4.9	9.4	-4.9	9.4	-4.9	9.4	-4.9	9.4
23-27 Mining	4.5	7.9	6.0	12.4	6.0	12.4	6.0	12.4	6.0	12.4	6.0	12.4
Importables	17.3	5.0	23.0	14.6	23.0	14.6	23.0	14.6	23.0	14.6	23.0	14.6
Exportables	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
28-96 Manufac- turing	45.5	41.0	44.3	33.2	42.5	29.2	40.5	23.5	39.0	27.5	37.3	29.3
Importables	61.2	36.8	59.5	24.8	57.2	18.3	54.3	3.1	52.3	18.5	50.0	23.5
Exportables	3.8	10.6	3.8	10.6	3.8	10.6	3.8	10.6	3.8	10.6	3.8	10.6
03-13 Agriculture	9.8	15.6	15.4	23.5	13.8	21.1	12.3	18.8	10.9	16.5	9.4	14.2
Importables	31.7	9.4	49.8	7.8	44.9	6.7	40.0	5.6	35.2	4.2	30.4	2.8
Exportables	0.0	0.6	0.0	0.5	0.0	0.5	0.0	0.3	0.0	0.3	0.0	0.3

Table 12 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
56-58 Wood and wood products	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9
Importables	—	—	—	—	—	—	—	—	—	—	—	—
Exportables	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9
59-66 Paper, rubber, leather and plastic products	113.9	88.7	126.4	99.8	117.0	93.4	106.1	82.5	98.5	78.0	89.2	69.4
Importables	134.9	88.2	149.7	99.5	138.5	93.3	125.6	82.1	116.6	77.8	105.6	69.0
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67-75 Chemicals and chemical products	71.1	49.7	57.4	40.0	53.0	37.1	52.1	37.2	51.8	37.2	51.4	37.3
Importables	71.1	49.7	57.4	40.0	53.0	37.1	52.1	37.2	51.8	37.2	51.4	37.3
Exportables	—	—	—	—	—	—	—	—	—	—	—	—
76-79 Nonmetallic mineral products	39.5	21.4	39.5	16.7	41.5	13.4	40.9	11.5	40.4	9.7	39.9	8.3
Importables	40.0	11.6	40.0	13.1	42.0	10.9	41.5	8.7	40.9	6.5	40.4	4.3
Exportables	0.0	110.6	0.0	78.0	0.0	135.6	0.0	131.6	0.0	128.0	0.0	126.3

Table 12 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
80-82 Basic metals and metal products	72.6	10.0	78.6	10.8	77.7	10.8	66.6	9.6	60.3	8.5	54.9	7.8
Importables	73.7	4.2	79.8	4.5	78.9	4.7	0.0	67.9	0.0	61.4	55.8	3.8
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83-91 Machinery, including electrical and transport equipment	36.0	28.8	32.5	30.6	25.2	30.4	25.4	27.4	24.6	26.6	22.8	24.8
Importables	46.8	52.6	42.3	28.4	32.8	30.9	32.9	27.0	31.9	26.1	29.7	24.5
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92-96 Miscellaneous manufactures	42.1	49.9	39.5	47.5	36.7	43.8	34.0	40.2	31.2	36.5	28.4	32.9
Importables	90.8	18.3	85.2	22.3	79.1	19.1	73.0	16.0	66.9	12.9	60.8	9.9
Exportables	1.3	0.0	1.3	0.0	1.3	0.0	1.3	0.0	1.3	0.0	1.3	0.0

¹Weight used : FTVA.Qbj ; EPRs were calculated with duty drawback.

²Standard deviation.

Table 13

Weighted Average Effective Protection Rates Using Price Comparisons:¹ 1990-1995
 (In percent)

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
03-96 All sectors	35.7	59.1	36.4	60.8	35.1	59.3	33.6	57.5	32.5	56.5	31.3	55.5
Importables	69.0	64.6	70.2	66.9	67.8	65.5	65.0	64.0	62.8	63.3	60.6	62.7
Exportables	-1.4	10.4	-1.4	10.4	-1.4	10.4	-1.4	10.4	-1.4	10.4	-1.4	10.4
03-22 Agriculture, fishing and forestry	5.2	22.1	6.4	24.3	5.7	23.0	5.0	21.8	4.4	20.7	3.7	19.7
Importables	45.1	9.0	51.1	9.3	47.7	9.0	44.3	9.4	41.0	10.3	37.7	11.7
Exportables	-4.9	9.4	-4.9	9.4	-4.9	9.4	-4.9	9.4	-4.9	9.4	-4.9	9.4
23-27 Mining	4.5	7.9	6.0	12.4	6.0	12.4	6.0	12.4	6.0	12.4	6.0	12.4
Importables	17.3	5.0	23.0	14.6	23.0	14.6	23.0	14.6	23.0	14.6	23.0	14.6
Exportables	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
28-96 Manufac- turing	54.6	64.2	54.9	62.5	53.2	60.7	51.1	58.7	49.7	60.5	48.1	61.6
Importables	73.7	65.4	74.1	63.0	71.9	61.2	69.0	59.3	67.0	62.5	64.9	61.6
Exportables	3.8	10.6	3.8	10.6	3.8	10.6	3.8	10.6	3.8	10.6	3.8	10.6
03-13 Agriculture	13.7	21.1	15.4	23.5	14.5	22.3	13.6	21.2	12.8	20.2	12.0	19.4
Importables	44.4	8.5	49.8	7.8	47.0	8.3	44.3	9.4	41.6	10.8	39.0	12.6
Exportables	0.0	0.6	0.0	0.5	0.0	0.5	0.0	0.3	0.0	0.3	0.0	0.3

Table 13 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
56-58 Wood and wood products												
Importables	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9
Exportables	—	—	—	—	—	—	—	—	—	—	—	—
Exportables	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9	29.4	10.9
59-66 Paper, rubber, leather and plastic products												
Importables	113.9	88.7	126.4	99.8	117.0	93.4	106.1	82.5	98.5	78.0	89.2	69.4
Exportables	134.9	88.2	149.7	99.5	138.5	93.3	125.6	82.1	116.6	77.8	105.6	69.0
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67-75 Chemicals and chemical products												
Importables	108.9	79.1	103.6	87.1	99.2	88.2	98.3	88.8	98.1	89.0	97.6	89.3
Exportables	108.9	79.1	103.6	87.1	99.2	88.2	98.3	88.8	98.1	89.0	97.6	89.3
Exportables	—	—	—	—	—	—	—	—	—	—	—	—
76-79 Nonmetallic mineral products												
Importables	163.0	49.3	173.8	44.3	175.7	36.6	175.2	37.9	174.6	39.4	174.1	40.8
Exportables	165.0	19.4	175.9	19.4	177.9	20.8	177.4	23.0	176.8	25.2	176.3	27.4
Exportables	0.0	110.6	0.0	78.0								

Table 13 *continued*

	1989-1990	SD ²	1991	SD	1992	SD	1993	SD	1994	SD	1995	SD
80-82 Basic metals and metal products												
	72.6	10.0	78.6	10.8	77.7	10.8	66.6	9.6	60.3	8.5	54.9	7.8
Importables	73.7	4.2	79.8	4.5	78.9	4.7	67.7	4.8	61.3	4.1	55.8	3.8
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83-91 Machinery, including electrical and transport equipment												
	48.8	72.4	45.3	74.9	38.4	76.2	37.6	76.0	36.7	75.5	35.3	74.5
Importables	63.4	76.7	58.8	80.6	49.8	83.5	48.9	83.3	47.7	82.9	45.9	82.0
Exportables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92-96 Miscellaneous manufactures												
	42.1	49.9	39.5	47.5	36.7	43.8	34.0	40.2	31.2	36.5	28.4	32.9
Importables	90.8	18.3	85.2	22.3	79.1	19.1	73.0	16.0	66.9	12.9	60.8	9.9
Exportables	1.3	0.0	1.3	0.0	1.3	0.0	1.3	0.0	1.3	0.0	1.3	0.0

¹Weight used: FTVA.Qbj ; EPRs were calculated with duty drawback.

²Standard deviation.

Table 14
Frequency Distribution of EPRs: 1990 and 1995

EPR in percent	Book Rates		Price Comparison	
	1990	1995	1990	1995
< 0	36	33	36	33
= 0	3	5	3	5
1-10	1	3	1	3
11-20	6	4	6	4
21-30	5	8	4	8
31-40	6	13	5	9
41-50	7	2	7	2
51-60	3	10	3	10
61-70	4	7	3	7
71-80	4	0	3	0
81-90	2	2	2	2
91-100	6	0	7	0
>100	21	17	24	21
Total	104	104	104	104

Sources: Tables 10 and 11.

LIBERALIZATION OF FOREIGN EXCHANGE

Foreign exchange controls have traditionally formed a part of industrialization policies. In the mid-1980s, exchange rate policy shifted its focus to the external debt because of the burden of servicing the foreign debt. The TRP began in 1981 and is still in effect, and throughout this period, the deregulation of the foreign exchange market was never effected as a complementary measure to trade reform. Controls on foreign exchange, which remained throughout the 1980s, were partially lifted only in January 1992 before being completely lifted in August 1992. Most controls on trade as well as on nontrade transactions were removed. No Central Bank permit is needed for banks to sell foreign exchange except when the item to be imported is still restricted. The most significant moves were to allow

100 percent retention and the complete free use of export proceeds. Although substantial changes have been made in liberalizing the exchange market, the market is far from being really free. This is evident from the unevenness with which liberalization is implemented: there are no limits to capital inflows as there are to outflows, and there are purchase limits but no selling limits.

The lifting of exchange controls should have accompanied the ILP in the 1980s. The only problem is that while this may have been called for to complement trade reform, it may have been inconsistent with an existing stabilization program. The Philippines has a long experience of inflation stemming from devaluation. This would have jeopardized the fight against inflation in the stabilization program, although in reality the devaluation brought about inflation because the exchange rate level was overvalued most of the time. With the lifting of exchange controls in 1992, the peso appreciated in real terms. Table 15 shows that prior to the lifting of controls, the nominal exchange rate was P27.48 to the US dollar in 1991. Three months after the partial lifting of controls, i.e., in March 1992, the exchange rate appreciated to P25.81 per US dollar, and by the time controls were further lifted in August 1992, the rate had gone down to P24.67, finally settling at around P24.94 in December 1992. On the average, the peso appreciated by 7.6 percent in nominal terms in 1992; and with the average inflation rate for the same year at nine percent, this translated to at least a 16 percent appreciation in real terms.¹⁶

The appreciation could be traced to two factors: first, the weak demand for foreign exchange in 1992 because of the recession; second, the inflow of portfolio investments because of higher domestic interest rates and the reform in the exchange market with its consequent arbitrage opportunities (Table 15).¹⁷ Net portfolio investments were only about 32 percent of net foreign investments in 1990 and 1991, and outflows were very minimal. In 1992, the ratio

16. This assumes that the inflation rate of major trading partners is minimal and that their corresponding exchange rates do not change.

17. Diokno, B. et al. *Foreign Exchange and Exports*. PITO-P, 1993.

Table 15
Short-term Capital Investments: 1990-1993
(In US\$ million)

	Foreign Investments (1)	Portfolio Investments Inflow (2)	Portfolio Investments Outflow (3)	Net Portfolio Investments (4)	(4)/(1) (5)	Nominal Exchange Rate (6)	Inflation Rate (%) (7)
1990	480	152		152	0.32	24.31	12.4
1991	654	227	15	212	0.32	27.48	15.7
1992							
January	109	68	4	64		26.54	
February	60	18	7	11		26.16	
March	106	31	1	30		25.81	
April	66	38	5	33		25.67	
May	62	35	3	32		26.15	
June	82	66	3	63		26.12	
July	21	45	8	37		25.26	
August	122	38	20	18		24.67	

Table 15 *continued*

	Foreign Investments (1)	Portfolio Investments Inflow (2)	Portfolio Investments Outflow (3)	Net Portfolio Investments (4)	(4)/(1) (5)	Nominal Exchange Rate (6)	Inflation Rate (%) (7)
September	13	27	14	13		24.73	
October	14	31	16	15		24.78	
November	-7	67	13	54		24.94	
December	89	102	21	81			
Total	737	566	115	451	0.61	25.53^a	8.2^a
1993*	285	921	453	468	1.64	26.21	
^a Average for the year	*As of June 1993						

Source: Central Bank Statistical Center.

rose to 61 percent; and for the first six months of 1993, the ratio was 164 percent. Net portfolio investment stood at \$152 million and \$212 million in 1990 and 1991, respectively; there was a dramatic 120 percent increase in 1992, with the surge taking place in the months of November and December after “complete” liberalization.

CONCLUSION

Trade reform as embodied in E.O. 470 made some gains in the 1990s but wavered in its commitment; and together with the real appreciation of the peso and the effects of E.O. 8 and M.O. 95, its achievement was reduced to minimal. Further, the series of policy changes sent confusing rather than consistent signals to the private sector. Overall, the liberalization of the exchange market is still perceived to be the more significant gain in the long run despite the real appreciation of the peso caused by movements in the capital account.

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Theoretical Framework and Estimation Methodology

THEORETICAL FRAMEWORK

The Chunglee Model

THE objective of the Chunglee model¹⁸ is to provide a framework for assessing the effects of the Tariff Reform Program (TRP) on output, employment, income, intermediate and final demand, exports and imports, and the balance of trade. In this study, the model is used to assess the effects of (a) changes in tariff policy, and (b) the lifting of QRs. The model is of the partial-equilibrium type with the following assumptions: first, the economy is small and open; second, nontraded goods are produced in constant prices; third, imports are perfect substitutes for locally produced goods; fourth, factor prices are not affected by trade reform over the short run; fifth, the economy is composed of input-output sectors so that the basic unit of analysis is the I-O sector which is characterized by a supply and demand function; and sixth, all policy instruments are constant, except, of course, trade policy.

The model starts with the argument that the output of sector j , Q_j , is a function of effective price or value-added, V_j , only,

$$Q_j = f(V_j) \tag{1}$$

18. Lee (1983).

V_j in unit prices is equal to $(1+t_j) - \sum a_{ij} (1+t_{ij})$ in equation (1.1), where t_j is the tariff on the output, a_{ij} is the amount of input i used to produce one unit of output j , and t_{ij} is the tariff on the input.

$$V_j = (1+t_j) - \sum a_{ij} (1+t_{ij}) \quad (1.1)$$

Change in output, dQ_j in equation (1.2), is equal to the product of supply elasticity, b_j , Q_j , and a proportionate change in effective price, V_j .

$$dQ_j = b_j Q_j \hat{V}_j \quad (1.2)$$

\hat{V}_j is the ratio of the difference between V_j^1 and V_j^0 , where V_j^1 is post-trade reform effective price and V_j^0 is the pre-trade reform effective price,

$$\hat{V}_j = \frac{V_j^1 - V_j^0}{V_j^0} \quad (1.3)$$

In equation (1.3), subtract V_j^f from V_j^1 , add V_j^f to V_j^0 , then multiply by V_j^f/V_j^f to get equation (1.4).¹⁹

$$\hat{V}_j = \frac{(V_j^1 - V_j^f) - (V_j^0 - V_j^f)}{V_j^f} * \frac{V_j^f}{V_j^0} \quad (1.4)$$

19. V_j^f s before and after trade reform are similar because of the use of fixed coefficients which do not allow substitution among goods to occur even as price changes.

$(V_j^1 - V_j^f) / V_j^f$ is actually the post-trade reform EPR, E_j^1 , while $(V_j^0 - V_j^f) / V_j^f$ is the pre-trade reform EPR, E_j^0 , (equations 1.5 and 1.6., respectively).

$$E_j^1 = (V_j^1 - V_j^f) / V_j^f \quad (1.5)$$

$$E_j^0 = (V_j^0 - V_j^f) / V_j^f \quad (1.6)$$

Since $E_j^0 = (V_j^0 / V_j^f) - 1$, (equation 1.6), $1 + E_j^0 = V_j^0 / V_j^f$ (equation 1.7), and $1 / (1 + E_j^0) = V_j^f / V_j^0$ (equation 1.8), then equation (1.9) shows that the proportionate change in effective price, \hat{V}_j , is the difference between E_j^1 and E_j^0 , over $1 + E_j^0$.

$$1 + E_j^0 = V_j^0 / V_j^f \quad (1.7)$$

$$\frac{1}{1 + E_j^0} = \frac{V_j^f}{V_j^0} \quad (1.8)$$

$$\hat{V}_j = \frac{E_j^1 - E_j^0}{1 + E_j^0} \quad (1.9)$$

Changes in output, therefore, can be estimated from changes in EPRs, as shown in equation (1.10). The effect of trade policy reform on output can then work its way indirectly via changes in the EPR which captures the net protection received by an activity.

$$dQ_j = b_j Q_j (E_j^1 - E_j^0) / (1 + E_j^0) \quad (1.10)$$

Equation (2) states that the level of employment in sector j , L_j , is the product of an employment ratio, e_j , and Q_j while equation (2.1) shows the change in employment of sector j , dL_j , to be the product of e_j and the change in output, dQ_j .

$$L_j = e_j Q_j \quad (2)$$

$$dL_j = e_j dQ_j \quad (2.1)$$

Equation (3) shows that income, Y_j , is the product of V_j and Q_j . The change in income, dY_j , is equal to V_j times dQ_j (equation 3.1).

$$Y_j = V_j Q_j \quad (3)$$

$$dY_j = V_j dQ_j \quad (3.1)$$

Equation (4) is intermediate demand. The intermediate demand of sector j , I_j , is the sum of the product of a_{ji} , the amount of input j used in producing a unit of output i , and Q_i ; the change in intermediate demand of sector j , dI_j , comes from the changes in output only and is the product of a_{ji} and dQ_i (equation 4.1).

$$I_j = \sum a_{ji} * Q_i \quad (4)$$

$$dI_j = \sum a_{ji} * dQ_i \quad (4.1)$$

Final demand, F_j , is a function of price and income (equation 5). Assuming that cross-price elasticities are zero, the change in final demand of sector j due to changes in price is estimated as the product of the proportionate change in implicit tariffs, \hat{T}_j , the own-price

elasticity of demand, G_j , and final demand; change in final demand due to the change in income is estimated as the product of the income elasticity of demand of sector j , K_j , the proportionate change in income, Y , and final demand. Therefore, the total change in final demand of sector j , dF_j , is the sum of the price and income effects (equation 5.1).

$$Fb_j = g(T_p Y) \quad (5)$$

$$dF_j = [G_j * (\hat{T}_j) + K_j \hat{Y}] F_j \quad (5.1)$$

Equation (6) is total demand, T_j , defined as the sum of intermediate and final demand, while the change in total demand of sector j , dT_j , is the sum of the change in intermediate demand and change in final demand (equation 6.1).

$$T_j = F_j + I_j \quad (6)$$

$$dT_j = dF_j + dI_j \quad (6.1)$$

Equation (7) is imports, M_j , which represents the difference between the total demand for, and output of, importable sectors; the change in imports of sector j , dM_j , is the difference between the change in total demand and the change in output of importable sector j , dQ_j , as shown in equation (7.1).

$$M_j = T_j - Q_j \quad (7)$$

$$dM_j = dT_j - dQ_j \quad (7.1)$$

Equation (8) is exports, X_j , which is the difference between output and total demand of exportable sector j ; the change in exports of sector j , dX_j , is taken as the difference between the change in output and the change in total demand of exportable sector j (equation 8.1).

$$X_j = Q_j - T_j \quad (8)$$

$$dX_j = dQ_j - dT_j \quad (8.1)$$

Equation (9) is the trade deficit, TD , which is defined as the difference between the sum of imports of importable sectors, ΣM_j , and the sum of exports of exportable sectors, ΣX_j ; the change in the trade deficit, dTD , is the difference between the sum of changes in imports, ΣdM_j , and the sum of changes in exports, ΣdX_j (equation 9.1).

$$TD = \Sigma M_j - \Sigma X_j \quad (9)$$

$$dTD = \Sigma dM_j - \Sigma dX_j \quad (9.1)$$

The Simulation Model

The simulation model²⁰ is basically the Chunglee model with a major difference, i.e., the assumption regarding prices: in the latter model, there is an implicit assumption that prices are constant; in the former model, this assumption is relaxed. The objective of this section is to present the simulation model which quantifies the effects of trade reform assuming a flexible real exchange rate.

20. Medalla (1986b).

The simulation model begins with equation (1.3) from the Chunglee model. Equations (1.31) and (1.32) state the effective prices before and after trade reform assuming a flexible real exchange rate, V_j^{0*} and V_j^{1*} , respectively. V_j^{0*} is equal to the product of r_0 , the real exchange rate before trade reform, and V_j^0 , the effective price before trade reform; V_j^{1*} is equal to the product of r_1 , the real exchange rate after trade reform, and V_j^1 , the effective price after trade reform.

$$\hat{V}_j = \frac{V_j - V_j^0}{V_j^0} \quad (1.3)$$

$$V_j^{0*} = r_0 V_j^0 \quad (1.31)$$

$$V_j^{1*} = r_1 V_j^1 \quad (1.32)$$

Equation (1.33) defines the proportionate change in effective price incorporating changes in the real exchange rate.

$$\hat{V}_j^* = \frac{V_j^{1*} - V_j^{0*}}{V_j^{0*}} \quad (1.33)$$

Substitute equations (1.31) and (1.32) into equation (1.33) to get equation (1.34).

$$\hat{V}_j^* = \frac{r_1 V_j^1 - r_0 V_j^0}{r_0 V_j^0} \quad (1.34)$$

Use equations (1.5) and (1.6) from the Chunglee model and substitute equation (1.34) to get equations (1.35) and (1.36) which state that \hat{V}_j^* is the product of the relative real exchange rate, (r_1/r_0) , and the relative EPR, $[(1+E_j^1)/(1+E_j^0)]$, minus one.

$$V_j^1 = V_j^f(1+E_j^1) \quad (1.5)$$

$$V_j^o = V_j^f(1+E_j^o) \quad (1.6)$$

$$\hat{V}_j^* = \frac{r_1 V_j^f(1+E_j^1) - r_o V_j^f(1+E_j^o)}{r_o V_j^f(1+E_j^o)} \quad (1.35)$$

$$\hat{V}_j^* = \frac{r_1}{r_o} \left(\frac{1+E_j^1}{1+E_j^o} \right) - 1 \quad (1.36)$$

Equation (1.37) is a restatement of equation (1.2) assuming a flexible real exchange rate; substitute equation (1.36) into equation (1.37) to get equation (1.38).

$$dQ_j^* = b_j Q_j (\hat{V}_j^*) \quad (1.37)$$

$$dQ_j^* = b_j Q_j \left[\frac{r_1}{r_o} \left(\frac{1+E_j^1}{1+E_j^o} \right) - 1 \right] \quad (1.38)$$

Equation (1.38), the heart of the simulation model, shows the change in output due to trade reform with real exchange rate adjustment to be a function of the relative real exchange rate, (r_1/r_o) and relative EPR, $[(1+E_j^1)/(1+E_j^o)]$. The arguments in the remaining equations of the simulation model are similar to those in the Chunglee

model; nevertheless, the changes reflect an adjustment in the real exchange rate.

ESTIMATION METHODOLOGY

The Chunglee Model

Data for all macro variables are from the 1983 (127 x 127) I-O table. The discussion on estimation methodology and data sources follows the order of the equations in the theoretical and simulation models. All variables are in 1983 peso border prices. The 1983 I-O table is first classified into traded and nontraded sectors: if the exports or imports of a sector are less than one percent of its respective output, the sector is classified as a nontraded (NT) sector; another factor is when a good is tradable but not actually traded because of existing trade policy. A sector is classified as purely exportable (PX) if exports are at least 15 percent of output. Sectors where there are substantial imports and exports are classified as mixed sectors. Of the 127 sectors, only 85 were classified as traded sectors: 47 were purely importable (PM) sectors, 19 purely exportable (PX), and 19 mixed sectors (MW) with an importable (MM) and exportable (MX) component. This brings the total number of traded sectors to 104 (Table 16). There are 42 nontraded sectors (Table 17). Data on tariff rates were gathered from the 1991 Tariff and Customs Code of the Philippines, while implicit tariff rates computed from price comparisons were taken from a study on quantitative restrictions by de Dios (1994); implicit rates computed from tariffs and taxes were taken from a study by Medalla (1991).

Table 16
Data for the Chunglee Model (Traded Sectors)
(In percent)

IO	Type	Sector	Qbj (‘000)	Sectoral EPR				Relative EPR	
				Tariffs and Taxes		Price Comparison		Tariffs and Taxes	
				1990	1995	1990	1995	1990	1995
03	PM	Corn	3,398	20.9	32.6	54.3	54.8	-4.2	9.1
04	PX	Coconut, copra made in farms	7,206	-0.4	-0.1	-0.4	-0.1	-21.0	-17.8
06	PX	Banana	3,382	-1.7	-1.1	-1.7	-1.1	-22.1	-18.6
07	PX	Other fruits and nuts	6,099	-0.5	-0.3	-0.5	-0.3	-21.2	-18.0
08	PM	Vegetables	4,228	-40.9	30.8	40.9	30.8	11.7	7.7
10	MX	Tobacco	304	-5.2	-7.0	-5.2	-7.0	-24.9	-23.5
10	MM		0	16.4	56.4	32.9	56.4	-7.7	28.8
11	MX	Fiber crops	1,279	-0.5	-0.2	-0.5	-0.2	-21.2	-17.9
11	MM		54	11.8	5.0	11.8	5.0	-11.4	-13.5
12	PX	Coffee and cacao	2,558	-0.5	-0.2	-0.5	-0.2	-21.1	-17.8
13	PM	Other commercial crops, n.e.c.	1,078	28.1	22.9	28.1	22.9	1.5	1.1
19	MX	Commercial fishing, offshore, coastal	6,858	-5.8	-2.7	-5.8	-2.7	-25.4	-19.9
19	MM		1,007	35.8	39.0	35.8	39.0	7.6	14.5
20	MX	Inland fishing and other fishery activities	10,997	-1.6	-1.0	-1.6	-1.0	-22.0	-18.5
20	MM		1,548	55.0	32.9	55.0	32.9	22.8	9.4
21	PX	Logging	10,682	-24.8	-23.9	-24.8	-23.9	-40.4	-37.4
22	PM	Other forestry activities	355	41.7	24.7	41.7	24.7	12.3	2.6
23	PX	Gold and other precious metals	4,278	-9.3	-5.9	-9.3	-5.9	-28.1	-22.5
24	PX	Copper ore	2,647	-15.5	-9.4	-15.5	-9.4	-33.1	-25.4
25	PX	Other metallic mining	589	-14.6	-9.4	-14.6	-9.4	-32.4	-25.4
26	PM	Sand, stone and clay quarrying	1,246	20.4	32.2	20.4	32.2	-4.6	8.8
27	PM	Other nonmetal mining/quarrying	590	9.3	-0.3	9.3	-0.3	-13.4	-17.9
28	PM	Rice and corn milling	25,764	53.5	53.2	22.4	22.1	21.7	26.1
29	PX	Sugar milling and refining	6,223	-1.2	-0.5	-1.2	-0.5	-21.7	-18.1
30	PM	Milk processing	2,327	17.5	17.3	17.5	17.3	-6.9	-3.5
31	PM	Other dairy products	942	39.3	38.7	39.3	38.7	10.4	14.2
32	PX	Crude coco vegetable and animal oils/fats	12,680	-7.1	-4.7	-7.1	-4.7	-26.4	-21.5
33	PM	Refined (cooking) oil and margarine	3,374	185.3	123.3	185.3	123.3	126.1	83.8
34	PM	Slaughtering and meat packaging plants	10,604	49.9	30.2	49.9	30.2	18.7	7.2
35	PM	Meat processing	1,048	66.8	32.5	134.6	131.1	32.1	9.1
36	PM	Flour and other grain mill	3,453	103.9	115.8	103.9	115.8	61.5	77.7
37	MX	Animal feeds	2,159	-45.3	-52.7	-45.3	-52.7	-56.6	-61.1
37	MM		3,091	101.3	49.6	101.3	49.6	59.5	23.1
38	MX	Fruit and vegetable preserves	2,557	-67.0	-59.2	-67.0	-59.2	-73.8	-66.4
38	MM		216	220.4	202.9	220.4	202.9	153.9	149.3
39	MX	Fish preparations	4,510	-172.0	-153.0	-172.0	-153.0	-157.1	-143.6
39	MM		953	1147.7	649.6	1147.7	649.6	888.7	517.1

Relative EPR											
Price Comparison		e)	V)	Fb) (‘000)	Cases ABEF Gj)	K)	Cases CDGH Gj)	Price Comparison		Tariffs and Taxes	
1990	1995							1990	1995	1990	1995
16.4	20.4	0.5	0.8	212	-0.4	0.5	-0.9	50.0	50.0	20.0	30.0
-24.8	-22.4	0.5	0.8	0	-0.3	0.5	-0.6	0.0	0.0	0.0	0.0
-25.8	-23.1	0.4	0.7	1,984	-0.3	0.5	-0.6	0.0	0.0	0.0	0.0
-24.9	-22.5	0.4	0.9	4,830	-0.4	0.5	-0.8	0.0	0.0	0.0	0.0
6.3	1.7	0.6	0.9	3,916	-0.4	0.5	-0.8	39.3	29.4	39.3	29.4
-28.4	-27.7	0.4	0.8	229	-0.4	0.5	-0.8	0.0	0.0	0.0	0.0
0.3	21.6	0.4	0.7	0	-0.4	0.5	-0.8	30.0	50.0	30.0	50.0
-24.9	-22.4	0.3	0.9	214	-0.4	0.5	-0.8	0.0	0.0	0.0	0.0
-15.6	-18.3	0.3	0.9	0	-0.4	0.5	-0.8	11.6	5.0	11.6	5.0
-24.9	-22.4	0.4	0.9	224	-0.4	0.5	-0.8	0.0	0.0	0.0	0.0
-3.3	-4.5	0.4	0.8	86	-0.4	0.5	-0.8	24.9	20.0	24.9	20.0
-28.9	-24.3	0.3	0.7	517	-0.4	0.5	-0.8	0.0	0.0	0.0	0.0
2.5	8.1	0.3	0.6	3,349	-0.4	0.5	-0.8	29.9	30.0	29.9	30.0
-25.7	-23.0	0.3	0.9	1,460	-0.5	0.5	-1.0	0.0	0.0	0.0	0.0
16.9	3.4	0.3	0.8	9,738	-0.5	0.5	-1.0	49.8	29.9	49.8	29.9
-43.3	-40.8	0.2	0.8	2,087	-0.5	0.5	-1.0	-20.0	-20.0	-20.0	-20.0
6.9	-3.0	0.4	1.0	244	-0.5	0.5	-1.0	41.2	24.3	41.2	24.3
-31.5	-26.8	0.2	0.5	812	-0.5	0.5	-1.0	0.0	0.0	0.0	0.0
-36.3	-29.5	0.2	0.4	296	-0.5	0.5	-1.0	0.0	0.0	0.0	0.0
-35.6	-29.5	0.2	0.4	0	-0.5	0.5	-1.0	0.0	0.0	0.0	0.0
-9.1	2.8	0.4	0.7	140	-0.5	0.5	-1.0	19.2	27.6	19.2	27.6
-17.5	-22.4	0.3	0.6	809	-0.5	0.5	-1.0	10.3	1.9	10.3	1.9
-7.6	-5.0	0.1	0.4	23,414	-0.3	0.5	-0.5	22.0	22.0	50.0	50.0
-25.5	-22.7	0.1	0.4	2,377	-0.2	0.5	-0.4	0.0	0.0	0.0	0.0
-11.3	-8.8	0.1	0.2	2,294	-0.8	1.0	-1.5	16.9	16.9	16.9	16.9
5.1	7.9	0.1	0.2	687	-0.8	1.0	-1.5	25.6	26.7	25.6	26.7
-29.9	-25.9	0.1	0.2	894	-0.3	1.0	-0.6	0.0	0.0	0.0	0.0
115.3	73.6	0.1	0.1	2,350	-0.1	0.5	-0.2	44.5	30.0	44.5	30.0
13.1	1.2	0.1	0.1	9,450	-0.8	1.0	-1.6	49.6	30.0	49.6	30.0
77.0	79.7	0.1	-0.1	818	-0.8	1.0	-1.6	94.0	94.0	50.0	30.0
53.8	67.8	0.0	-0.1	1,212	-0.3	0.5	-0.5	29.3	29.0	29.3	29.0
-58.7	-63.2	0.1	0.4	709	-0.3	0.5	-0.5	0.0	0.0	0.0	0.0
51.9	16.3	0.1	0.2	0	-0.3	0.5	-0.5	42.8	29.8	42.8	29.8
-75.1	-68.3	0.1	0.6	332	-0.5	0.5	-0.9	0.0	0.0	0.0	0.0
141.8	135.5	0.1	0.0	1,033	-0.5	0.5	-0.9	40.3	36.8	40.3	36.8
-154.3	-141.2	0.1	0.3	1,194	-0.5	0.5	-0.9	0.0	0.0	0.0	0.0
841.6	482.9	0.1	-0.1	2,666	-0.5	0.5	-0.9	49.3	30.0	49.3	30.0

Table 16 *continued*

IO	Type	Sector	Qbj ('000)	Sectoral EPR				Relative EPR	
				Tariffs and Taxes		Price Comparison		Tariffs and Taxes	
				1990	1995	1990	1995	1990	1995
40	MX	Bakery products including noodles	335	-73.9	-58.0	-73.9	-58.0	-79.3	-65.4
40	MM		3,598	133.8	80.9	133.8	80.9	85.3	49.0
41	MX	Cocoa products and confectionery	716	-68.4	-59.9	-68.4	-59.9	-74.9	-67.0
41	MM		1,217	156.1	119.2	156.1	119.2	102.9	80.5
42	MX	Coffee, ground or instant	50	-13.5	-11.9	-13.5	-11.9	-31.5	-27.5
42	MM		1,073	165.2	131.1	165.2	131.1	110.1	90.2
43	PX	Desiccated coconut	1,724	-2.5	-1.8	-2.5	-1.8	-22.7	-19.2
45	MX	Miscellaneous food manufactures, n.e.c.	389	-13.2	-13.2	-13.2	-13.2	-31.2	-28.6
45	MM		1,722	66.8	51.1	66.8	51.1	32.2	24.4
46	PM	Wine and liquor	880	71.7	60.7	71.7	60.7	36.1	32.3
47	MX	Brewery and malt products	1,599	-9.2	-7.7	-9.2	-7.7	-28.1	-24.0
47	MM		120	99.7	101.3	99.7	101.3	58.3	65.7
49	PM	Cigars and cigarettes	3,369	103.7	104.3	103.7	104.3	61.4	68.2
50	PX	Tobacco leaf processing	1,760	-16.7	-24.9	-16.7	-24.9	-34.0	-38.1
51	PM	Textile mill products	5,347	131.5	64.0	131.5	64.0	83.4	35.0
52	MX	Knitting mill products	1,496	0.0	0.0	0.0	0.0	-20.8	-17.7
52	MM		865	69.5	54.1	69.5	54.1	34.3	26.9
53	MX	Other made-up textile goods	1,130	0.0	0.0	0.0	0.0	-20.8	-17.7
53	MM		302	87.3	56.9	87.3	56.9	48.4	29.2
54	PX	Wearing apparel	9,701	0.0	0.0	0.0	0.0	-20.8	-17.7
55	PX	Footwear except rubber/ plastic/wooden	1,645	0.0	0.0	0.0	0.0	-20.8	-17.7
56	PX	Lumber, rough or worked	5,957	27.9	31.1	27.9	31.1	1.4	7.9
57	PX	Veneer and plywood	3,998	12.2	21.0	12.2	21.0	-11.1	-0.4
58	PX	Other wood, cork and cane products	1,288	-1.6	1.5	-1.6	1.5	-22.1	-16.4
59	PM	Pulp, paper and paperboard	869	50.4	39.9	50.4	39.9	19.2	15.1
60	PM	Converted paper and paperboard products	745	177.6	110.0	177.6	110.0	120.0	72.9
61	PM	Publishing and printing	1,380	436.4	266.8	436.4	266.8	325.0	202.0
62	MX	Leather and leather products	302	-14.9	-19.6	-14.9	-19.6	-32.6	-33.8
62	MM		83	13.3	1.5	13.3	1.5	-10.2	-16.4
63	PM	Rubber tires and tubes	1,147	180.3	204.0	180.3	204.0	122.1	150.2
64	PM	Rubber footwear	340	302.1	319.7	302.1	319.7	218.6	245.5
65	PM	Other rubber products	279	124.7	62.3	124.7	62.3	78.1	33.6
66	MX	Fabricated plastic products	422	-32.2	-30.4	-32.2	-30.4	-46.3	-42.7
66	MM		2,793	114.6	90.0	114.6	90.0	70.0	56.4
67	PM	Drugs and medicines	3,419	31.3	22.7	98.4	104.3	4.0	1.0
68	PM	Basic industrial chemicals	1,044	54.6	40.6	54.6	40.6	22.5	15.8
69	PM	Fertilizer	1,298	243.3	196.7	837.3	943.1	172.0	144.3
70	PM	Plastic materials	871	60.9	34.2	60.9	34.2	27.5	10.5
71	PM	Pesticides, insecticides, etc.	523	2,649.8	-2,157.9	-2,649.8	-2,157.9	-2,120.4	-1,794.2
72	PM	Paints, varnish and related compounds	1,265	94.1	67.7	94.1	67.7	53.8	38.1

Relative EPR		ej	Vj	Fbj ('000)	Cases ABEF Gjj	Kj	Cases CDGH Gjj	Price Comparison		Tariffs and Taxes			
Price Comparison								1990	1995	1990	1995	1990	1995
								tj	tj	tj	tj	tj	tj
-80.3	-67.3	0.1	0.4	3,595	-0.5	0.5	-0.9	0.0	0.0	0.0	0.0		
76.4	40.7	0.1	-0.0	106	-0.5	0.5	-0.9	44.6	29.9	44.6	29.9		
-76.1	-68.8	0.1	0.5	982	-0.5	0.5	-0.9	0.0	0.0	0.0	0.0		
93.2	70.5	0.1	0.1	127	-0.5	0.5	-0.9	49.6	39.6	49.6	39.6		
-34.8	-31.5	0.1	0.6	992	-0.5	0.5	-0.9	0.0	0.0	0.0	0.0		
100.1	79.7	0.1	0.1	15	-0.5	0.5	-0.9	50.0	40.0	50.0	40.0		
-26.4	-23.7	0.1	0.5	268	-0.5	0.5	-0.9	0.0	0.0	0.0	0.0		
-34.5	-32.5	0.1	0.5	879	-0.5	0.5	-0.9	0.0	0.0	0.0	0.0		
25.9	17.5	0.1	0.2	0	-0.5	0.5	-0.9	47.9	38.5	47.9	38.5		
29.6	25.0	0.1	0.4	691	-0.5	0.5	-0.9	50.0	38.7	50.0	38.7		
-31.5	-28.2	0.1	0.6	94	-0.5	0.5	-0.9	0.0	0.0	0.0	0.0		
50.7	56.5	0.1	0.4	1,261	-0.5	0.5	-0.9	50.0	50.0	50.0	50.0		
53.7	58.9	0.1	0.3	3,261	-0.2	1.0	-0.4	50.0	50.0	50.0	50.0		
-37.1	-41.6	0.1	0.4	0	-0.2	1.0	-0.4	0.0	0.0	0.0	0.0		
74.7	27.5	0.1	0.1	3,405	-0.4	1.0	-0.8	39.1	20.3	39.1	20.3		
-24.5	-22.2	0.2	0.5	1,850	-0.4	1.0	-0.8	0.0	0.0	0.0	0.0		
27.9	19.9	0.2	0.3	0	-0.4	1.0	-0.8	41.0	30.0	41.0	30.0		
-24.5	-22.2	0.2	0.6	521	-0.4	1.0	-0.8	0.0	0.0	0.0	0.0		
41.3	22.0	0.2	0.2	111	-0.4	1.0	-0.8	34.2	22.1	34.2	22.1		
-24.5	-22.2	0.2	0.4	6,339	-0.4	1.0	-0.8	0.0	0.0	0.0	0.0		
-24.5	-22.2	0.1	0.1	393	-0.4	1.0	-0.8	0.0	0.0	0.0	0.0		
-3.5	1.9	0.1	0.2	880	-0.5	1.5	-1.0	0.0	0.0	0.0	0.0		
-15.4	-5.9	0.1	0.1	713	-0.5	1.5	-1.0	0.0	0.0	0.0	0.0		
-25.8	-21.1	0.2	0.4	351	-0.5	1.5	-1.0	0.0	0.0	0.0	0.0		
13.5	8.8	0.1	0.0	248	-0.5	1.5	-0.9	19.8	14.3	19.8	14.3		
109.5	63.3	0.1	-0.1	286	-0.5	1.5	-0.9	39.6	24.8	39.6	24.8		
304.8	185.2	0.2	-0.1	488	-0.5	1.5	-0.9	36.3	23.2	36.3	23.2		
-35.8	-37.5	0.2	0.8	129	-0.5	0.5	-1.0	0.0	0.0	0.0	0.0		
-14.5	-21.1	0.2	0.3	0	-0.5	0.5	-1.0	14.9	11.2	14.9	11.2		
111.5	136.4	0.1	-0.1	300	-0.6	1.5	-1.1	30.0	30.0	30.0	30.0		
203.4	226.4	0.1	0.0	336	-0.6	1.5	-1.1	50.0	50.0	50.0	50.0		
69.6	26.2	0.2	0.1	149	-0.6	1.5	-1.1	33.8	19.1	33.8	19.1		
-48.8	-45.8	0.1	0.4	1,667	-0.6	1.5	-1.1	0.0	0.0	0.0	0.0		
61.9	47.7	0.1	0.1	17	-0.6	1.5	-1.1	35.8	29.3	35.8	29.3		
49.7	58.8	0.1	0.2	2,910	-0.4	1.5	-0.8	43.0	43.0	18.4	13.0		
16.6	9.4	0.1	-0.1	170	-0.5	0.5	-1.0	20.3	15.9	20.3	15.9		
607.3	711.1	0.1	-0.1	86	-0.5	0.5	-1.0	28.0	28.0	15.8	12.7		
21.4	4.4	0.1	-0.0	155	-0.5	0.5	-1.0	17.2	12.9	17.2	12.9		
2,024.1	-1,700.2	0.1	-0.1	232	-0.5	0.5	-1.0	30.4	25.9	30.4	25.9		
46.5	30.4	0.1	0.2	205	-0.5	0.5	-1.0	36.1	27.0	36.1	27.0		

Table 16 *continued*

IO	Type	Sector	Qbj (^{'000})	Sectoral EPR				Relative EPR	
				Tariffs and Taxes		Price Comparison		Tariffs and Taxes	
				1990	1995	1990	1995	1990	1995
73	PM	Soap and synthetic detergents	1,508	148.6	107.9	148.6	107.9	97.0	71.2
74	PM	Cosmetics and toilet preparations	151	163.2	128.6	163.2	128.6	108.6	88.2
75	PM	Other chemical products	163	40.5	19.9	40.5	19.9	11.3	-1.3
76	PM	Products of petroleum, coke and coal	21,462	40.4	38.2	178.0	187.7	11.3	13.8
77	MX	Cement	159	-47.7	-23.5	-47.7	-23.5	-58.5	-37.0
77	MM		1,808	-47.7	66.4	-47.7	66.4	-58.5	37.0
78	PM	Glass and glass products	1,167	94.5	58.0	94.5	58.0	54.1	30.1
79	MX	Other nonmetallic mineral products	324	-21.8	-18.0	-21.8	-18.0	-38.0	-33.2
79	MM		281	92.4	66.1	92.4	66.1	52.5	36.8
80	PM	Primary iron and steel products	7,643	75.2	55.1	75.2	55.1	38.8	27.7
81	MX	Nonferrous basic metal products	143	-20.8	-14.7	-20.8	-14.7	-37.2	-29.8
81	MM		121	41.1	26.2	41.1	26.2	11.8	3.9
82	PM	Fabricated metal products	2,614	71.2	58.9	71.2	58.9	35.6	30.8
83	PM	Machinery and equipment except electric	6,539	39.2	20.5	39.2	15.5	10.3	-0.8
84	PM	Electric industrial machinery and equipment	498	29.0	17.6	17.5	22.2	2.2	-3.2
85	PM	Electrical appliances and housewares	996	99.0	59.8	99.0	59.8	57.7	31.5
86	PM	Batteries	1,194	130.3	151.3	130.3	114.6	82.5	106.9
87	PM	Wires and wiring devices	713	43.2	30.2	43.2	30.2	13.4	7.2
88	PX	Semi-conductor devices	3,332	0.0	0.0	0.0	0.0	-20.8	-17.7
89	PM	Miscellaneous electrical equipment, supplies and accessories	1,429	40.0	31.2	40.0	31.2	10.9	8.0
90	PM	Motor vehicles	875	72.2	38.0	348.5	356.4	36.4	13.6
91	PM	Other transport equipment supplies and accessories	1,267	25.5	15.1	25.5	15.1	-0.6	-5.2
92	PX	Furnitures and fixtures primarily of wood	1,170	-3.4	-2.1	-3.4	-2.1	-23.5	-19.4
93	PM	Furnitures and fixtures primarily of metal	51	175.7	104.3	175.7	104.3	118.5	68.2
94	PM	Musical instruments	165	92.1	53.4	92.1	53.4	52.2	26.3
95	PM	Artists' and office supplies	264	-31.8	-30.1	-31.8	-30.1	-45.9	-42.5
96	PM	Miscellaneous manufactures, n.e.c. and scrap	1,663	87.5	60.8	87.5	60.8	48.6	32.4

Qbj = 1983 output in peso border price

PM = purely importable

PX = purely exportable

MM = importable component of a mixed sector

MX = exportable component of a mixed sector

ej = employment ratio, compensation per peso output

Vj = free trade value-added per peso output in border price

Fbj = final demand in peso border price

Gij = own price elasticity

Kj = income elasticity

tj = implicit tariffs

Relative EPR									Price Comparison		Tariffs and Taxes	
Price Comparison		ej	Vj	Fbj ('000)	Cases ABEF Gjj	Kj	Cases CDGH Gjj	1990	1995	1990	1995	
1990	1995							tj	tj	tj	tj	
87.6	61.7	0.1	0.2	1,330	-0.5	0.5	-1.0	49.1	36.0	49.1	36.0	
98.6	77.7	0.1	-0.1	192	-0.5	0.5	-1.0	50.0	39.2	50.0	39.2	
6.0	-6.8	0.2	-0.4	168	-0.5	0.5	-1.0	18.6	12.2	18.6	12.2	
109.8	123.7	0.0	0.3	6,670	-0.1	1.5	-0.3	86.0	86.0	23.8	18.4	
-60.5	-40.5	0.1	0.5	442	-0.5	1.5	-1.0	0.0	0.0	0.0	0.0	
-60.5	29.4	0.1	0.0	0	-0.5	1.5	-1.0	0.0	19.9	0.0	19.9	
46.7	22.9	0.1	0.3	109	-0.5	1.5	-1.0	45.7	27.9	45.7	27.9	
-41.0	-36.9	0.2	0.8	174	-0.5	1.5	-1.0	0.0	0.0	0.0	0.0	
45.2	29.2	0.2	-0.0	0	-0.5	1.5	-1.0	34.9	26.0	34.9	26.0	
32.2	20.6	0.0	0.1	736	-0.5	1.5	-1.0	27.2	19.2	27.2	19.2	
-40.2	-33.7	0.1	0.3	776	-0.5	1.5	-1.0	0.0	0.0	0.0	0.0	
6.4	-1.8	0.1	0.1	0	-0.5	1.5	-1.0	19.3	12.8	19.3	12.8	
29.2	23.6	0.1	0.0	1,153	-0.5	1.5	-1.0	28.1	22.1	28.1	22.1	
5.0	-10.2	0.2	0.2	12,945	-0.5	1.5	-1.0	21.0	10.5	21.0	12.4	
-11.4	-5.0	0.2	0.3	8,284	-0.5	1.5	-0.9	14.0	14.0	18.7	12.1	
50.2	24.3	0.1	0.1	1,147	-0.5	1.5	-0.9	44.4	27.2	44.4	27.2	
73.8	66.9	0.1	-0.0	267	-0.5	1.5	-0.9	30.0	24.8	30.0	29.7	
8.0	1.3	0.2	0.1	189	-0.5	1.5	-0.9	22.0	16.0	22.0	16.0	
-24.5	-22.2	0.2	0.4	0	-0.5	1.5	-0.9	0.0	0.0	0.0	0.0	
5.6	2.0	0.1	0.2	2,324	-0.5	1.5	-0.9	24.3	19.5	24.3	19.5	
238.4	254.9	0.2	-0.0	1,158	-0.6	1.5	-1.1	138.4	138.4	36.5	21.0	
-5.3	-10.5	0.2	0.4	1,709	-0.6	1.5	-1.1	18.5	11.4	18.5	11.4	
-27.1	-23.9	0.2	0.3	447	-0.5	1.5	-0.9	0.0	0.0	0.0	0.0	
108.1	58.9	0.2	-0.0	51	-0.5	1.5	-0.9	47.5	28.8	47.5	28.8	
45.0	19.3	0.2	0.2	143	-0.7	1.5	-1.5	43.3	26.6	43.3	26.6	
-48.5	-45.7	0.1	-0.7	203	-0.7	1.5	-1.5	37.5	31.1	37.5	31.1	
41.5	25.1	0.2	0.0	1,711	-0.7	1.5	-1.5	25.9	17.2	25.9	17.2	



Table 17

**Data for the Chunglee Model, Traded and Nontraded Sectors
(In thousand peso border price)**

	Sector	Q _{bj}	e _j	L _j	V _j	Y _{bj}	I _{bj}	F _{bj}	T _{bj}	X _{bj}	M _{bj}
1	NT Palay, irrigated	7,983	0.4	3,164	0.7	559,940	7,884	31	7,915	95	0
2	NT Palay, non-irrigated	3,389	0.5	1,648	0.9	298,268	3,016	373	3,389	0	0
3	PM Corn	3,398	0.5	1,787	0.8	282,469	3,344	212	3,556	1	881
4	PX Coconut, copra made in farms	7,206	0.5	3,392	0.8	585,472	7,287	0	7,287	46	0
5	NT Sugarcane	2,936	0.4	1,263	0.8	230,823	2,893	43	2,936	0	0
6	PX Banana	3,382	0.4	1,405	0.7	249,655	398	1,984	2,382	1,001	0
7	PX Other fruits and nuts	6,099	0.4	2,303	0.9	523,154	1,059	4,830	5,889	210	16
8	PM Vegetables	4,228	0.6	2,407	0.9	391,974	549	3,916	4,465	12	127
9	NT Rootcrops	2,140	0.5	1,040	0.9	197,077	493	1,644	2,137	3	0
10	MX Tobacco	304	0.4	133	0.8	24,341	400	229	629	304	0
10	MM	0	0.4	0	0.7	0	0	0	0	0	15
11	MX Fiber crops	1,279	0.3	437	0.9	120,824	1,200	214	1,413	252	0
11	MM	54	0.3	18	0.9	4,885	85	0	85	0	215
12	PX Coffee and cacao	2,558	0.4	1,058	0.9	218,639	1,903	224	2,127	431	109
13	PM Other commercial crops, n.e.c.	1,078	0.4	429	0.8	81,956	2,585	86	2,671	50	1,664
14	NT Hogs	4,868	0.2	1,180	0.3	137,029	4,403	464	4,868	14	14
15	NT Other livestock and its products	3,549	0.3	1,011	0.5	182,509	2,725	827	3,552	1	3
16	NT Chicken for meat	6,346	0.1	861	0.3	159,256	4,843	1,525	6,368	0	22
17	NT Other poultry and its products	3,491	0.3	1,181	0.8	285,353	1,485	2,006	3,491	0	1
18	NT Agricultural services	410	0.4	158	0.9	34,886	411	1	413	0	3

Table 17 continued

	Sector	Qbj	ej	Lj	Vj	Ybj	lbj	Fbj	Tbj	Xbj	Mbj
19	MX Commercial fishing, offshore and coastal	6,853	0.3	1,888	0.7	492,955	3,109	517	3,625	44	0
19	MM	1,007	0.3	277	0.5	52,514	777	3,349	4,126	0	3
20	MX Inland fishing and other fishery activities	10,997	0.3	3,698	0.9	977,747	752	1,460	2,212	187	0
20	MM	1,548	0.3	520	0.8	124,283	188	9,738	9,926	0	5
21	PX Logging	10,682	0.2	2,472	0.8	846,706	7,757	2,087	9,844	838	0
22	PM Other forestry activities	355	0.4	137	1.0	34,013	240	244	483	7	121
23	PX Gold and other precious metals	4,278	0.2	871	0.5	214,880	0	812	812	3,466	2
24	PX Copper ore	2,647	0.2	512	0.4	103,134	0	296	296	2,351	0
25	PX Other metallic mining	589	0.2	126	0.4	22,828	1,046	0	1,046	325	22
26	PM Sand, stone and clay quarrying	1,246	0.4	463	0.7	85,779	1,298	140	1,438	18	121
27	PM Other nonmetallic mining and quarrying	590	0.3	158	0.6	32,883	14,132	809	14,941	31	20,130
28	PM Rice and corn milling	25,764	0.1	1,954	0.4	1,086,472	2,350	23,414	25,764	0	(0)
29	PX Sugar milling and refining	6,223	0.1	600	0.4	245,151	1,009	2,377	3,385	2,837	4
30	PM Milk processing	2,327	0.1	289	0.2	53,232	1,074	2,294	3,368	24	1,226
31	PM Other dairy products	942	0.1	90	0.2	20,798	564	687	1,251	2	317
32	PX Crude coconut, vegetable and animal oils and fats	12,680	0.1	794	0.2	282,979	6,385	894	7,279	5,401	177
33	PM Refined (cooking) oil and margarine	3,374	0.1	228	0.1	30,403	1,419	2,350	3,769	15	188
34	PM Slaughtering and meat packing plants	10,604	0.1	954	0.1	94,488	1,781	9,450	11,230	4	162



Table 17 continued

	Sector	Qbj	ej	Lj	Vj	Ybj	lbj	Fbj	Tbj	Xbj	Mbj
35	PM Meat processing	1,048	0.1	113	-0.1	(10,745)	261	818	1,080	1	1
36	PM Flour and other grain mill	3,453	0.0	106	-0.1	(43,024)	3,832	1,212	5,044	7	385
37	MX Animal feeds	2,159	0.1	112	0.4	95,504	1,979	709	2,687	720	0
37	MM	3,091	0.1	160	0.2	57,596	4,134	0	4,134	0	682
38	MX Fruit and vegetable preserves	2,557	0.1	315	0.5	140,004	481	332	813	852	0
38	MM	216	0.1	27	-0.0	(1,012)	94	1,033	1,127	0	52
39	MX Fish preparations	4,510	0.1	322	0.3	140,619	277	1,194	1,471	1,178	0
39	MM	953	0.1	69	-0.1	(8,191)	92	2,666	2,758	0	51
40	MX Bakery products including noodles	335	0.1	39	0.4	13,363	9	3,595	3,603	112	0
40	MM	3,598	0.1	420	-0.0	(10,660)	156	106	263	0	36
41	MX Cocoa products and confectionery	716	0.1	89	0.5	32,947	138	982	1,120	239	0
41	MM	1,217	0.1	150	0.1	7,717	407	127	554	0	37
42	MX Coffee, ground or instant	50	0.1	3	0.6	2,834	3	992	995	17	0
42	MM	1,073	0.1	61	0.1	12,145	119	15	134	0	1
43	PX Desiccated coconut	1,724	0.1	128	0.5	88,394	568	268	836	887	2
44	NT Ice, except dry ice	395	0.2	80	0.6	22,619	382	14	395	0	0
45	MX Miscellaneous food manufactures, n.e.c	389	0.1	37	0.5	18,994	192	879	1,071	130	0
45	MM	1,722	0.1	162	0.2	30,659	1,363	0	1,363	0	77
46	PM Wine and liquor	880	0.1	122	0.4	31,761	281	691	971	46	167
47	MX Brewery and malt products	1,599	0.1	196	0.6	91,026	367	94	461	19	0
47	MM	120	0.1	15	0.4	4,361	41	1,261	1,302	0	1
48	NT Soft drinks and carbonated water	2,327	0.1	295	0.4	96,491	146	2,182	2,327	2	2

Table 17 continued

	Sector	Qbj	ej	Lj	Vj	Ybj	l bj	Fbj	Tbj	Xbj	Mbj
49	PM Cigars and cigarettes	3,369	0.1	198	0.3	101,830	140	3,261	3,400	10	56
50	PX Tobacco leaf processing	1,760	0.1	209	0.4	76,258	2,149	0	2,149	1	0
51	PM Textile mill products	5,347	0.1	741	0.1	40,773	3,814	3,405	7,219	147	2,062
52	MX Knitting mill products	1,496	0.2	262	0.5	78,467	532	1,850	2,382	1,496	0
52	MM	865	0.2	152	0.3	22,882	475	0	475	0	950
53	MX Other made-up textile goods	1,130	0.2	178	0.5	61,834	317	521	839	377	0
53	MM	302	0.2	48	0.1	3,413	166	111	278	0	195
54	PX Wearing apparel	9,701	0.2	2,151	0.4	361,990	404	6,339	6,743	2,995	135
55	PX Footwear except rubber, plastic or wooden	1,645	0.1	227	0.1	21,928	56	393	449	1,201	73
56	PX Lumber, rough or worked	5,957	0.1	468	0.2	135,210	3,797	880	4,678	1,280	6
57	PX Veneer and plywood	3,998	0.1	390	0.1	45,809	1,919	713	2,633	1,365	0
58	PX Other wood, cork and cane products	1,288	0.2	214	0.4	45,601	677	351	1,029	259	11
59	PM Pulp, paper and paperboard	869	0.1	76	0.0	3,907	1,755	248	2,003	90	1,135
60	PM Converted paper and paperboard products	745	0.1	51	-0.1	(8,986)	1,193	286	1,479	21	169
61	PM Publishing and printing	1,380	0.2	245	-0.1	(13,484)	1,371	488	1,859	30	242
62	MX Leather and leather products	302	0.2	50	0.8	22,817	300	129	429	302	0
62	MM	83	0.2	14	0.3	2,311	246	0	246	0	172
63	PM Rubber tires and tubes	1,147	0.1	100	-0.1	(9,115)	1,284	300	1,584	5	163
64	PM Rubber footwear	340	0.1	43	0.0	466	17	336	353	12	22
65	PM Other rubber products	279	0.2	43	0.1	1,438	393	149	542	14	290
66	MX Fabricated plastic products	422	0.1	46	0.4	16,304	167	1,667	1,835	141	0

Table 17 *continued*

	Sector	Qbj	ej	Lj	Vj	Ybj	lbj	Fbj	Tbj	Xbj	Mbj
66	MM	2,793	0.1	302	0.1	18,637	1,682	17	1,699	0	69
67	PM	3,419	0.1	431	0.2	56,027	1,222	2,910	4,133	60	836
68	PM	1,044	0.1	107	-0.1	(7,978)	4,896	170	5,065	349	3,742
69	PM	1,298	0.1	102	-0.1	(16,557)	2,210	86	2,295	0	1,155
70	PM	871	0.1	92	-0.0	(1,821)	2,973	155	3,128	86	2,670
71	PM										
	Pesticides, insecticides, etc.	523	0.1	49	-0.1	(7,236)	459	232	691	13	147
72	PM										
	Paints, varnish and related compounds	1,265	0.1	149	0.2	24,682	1,501	205	1,706	4	236
73	PM										
	Soap and synthetic detergents	1,608	0.1	103	0.2	36,468	380	1,330	1,710	6	90
74	PM										
	Cosmetics and toilet preparations	151	0.1	11	-0.1	(2,089)	25	192	217	43	221
75	PM										
	Other chemical products	163	0.2	25	-0.4	(5,747)	1,303	108	1,411	97	1,193
76	PM										
	Products of petroleum, coke and coal	21,462	0.0	288	0.3	573,030	26,383	6,670	33,053	1,461	4,214
77	MX										
	Cement	159	0.1	9	0.5	7,191	82	442	523	53	0
77	MM										
		1,808	0.1	103	0.0	6,134	1,634	0	1,634	0	9
78	PM										
	Glass and glass products	1,167	0.1	158	0.3	36,286	1,713	109	1,822	34	175
79	MX										
	Other nonmetallic mineral products	324	0.2	57	0.7	24,088	173	174	347	108	0
79	MM										
		281	0.2	49	-0.1	(3,041)	646	0	646	0	50
80	PM										
	Primary iron and steel products	7,643	0.0	311	0.1	103,377	12,174	736	12,910	268	4,365
81	MX										
	Nonferrous basic metal products	143	0.1	11	0.3	3,587	188	776	964	1,022	0
81	MM										
		121	0.1	9	0.1	1,346	188	0	188	0	875
82	PM										
	Fabricated metal products	2,614	0.1	296	0.0	4,854	4,982	1,153	6,135	86	2,134

Table 17 *continued*

	Sector	Obj	ej	Lj	Vj	Ybj	Ibj	Fbj	Tbj	Xbj	Mbj
83	PM Machinery and equipment except electrical	6,939	0.2	1,229	0.2	166,344	1,297	12,945	14,242	265	9,648
84	PM Electric industrial machinery and equipment	498	0.2	87	0.3	13,357	614	8,284	8,898	4,982	10,735
85	PM Electrical appliances and housewares	996	0.1	132	0.1	11,024	58	1,147	1,205	149	483
86	PM Batteries	1,194	0.1	136	-0.0	(5,502)	1,289	267	1,556	21	43
87	PM Wires and wiring devices	713	0.2	124	0.1	8,694	1,062	189	1,252	91	599
88	PX Semi-conductor devices	3,332	0.2	728	0.4	123,878	2,237	0	2,237	2,353	1,120
89	PM Miscellaneous electrical equipment, supplies and accessories	1,429	0.1	176	0.2	27,836	571	2,324	2,895	38	1,965
90	PM Motor vehicles	875	0.2	159	-0.0	(3,777)	0	1,158	1,158	2	858
91	PM Other transport equipment supplies/accessories including reproduction services	1,267	0.2	258	0.4	50,149	2,150	1,709	3,860	230	3,263
92	PX Furnitures and fixtures, primarily of wood	1,170	0.2	235	0.3	39,465	23	447	470	700	8
93	PM Furnitures and fixtures, primarily of metal	51	0.2	9	-0.0	(178)	3	51	54	1	4
94	PM Musical instruments	165	0.2	37	0.2	3,612	56	143	199	2	40
95	PM Artists' and office supplies	264	0.1	33	-0.7	(18,084)	119	203	323	1	62
96	PM Miscellaneous manufactures, n.e.c. and scrap	1,663	0.2	321	0.0	1,118	1,865	1,711	3,576	1,375	2,396
97	NT Construction	38,903	0.2	6,688	0.5	1,806,792	1,004	37,315	38,319	652	67

Table 17 continued

		Sector	Qbj	ej	Lj	Vj	Ybj	lbj	Fbj	Tbj	Xbj	Mbj
98	NT	Electricity	9,766	0.1	1,038	0.2	213,133	7,445	2,321	9,766	0	0
99	NT	Gas manufacture and distribution except LPG	93	0.1	12	0.2	2,222	85	8	93	0	0
100	NT	Water services	881	0.2	196	0.5	43,801	574	306	881	0	0
101	NT	Bus line operation	5,637	0.2	1,199	0.4	208,341	229	5,466	5,695	0	58
102	NT	P.U. cars and taxicabs	927	0.3	235	0.5	42,150	50	877	927	35	35
103	NT	Jeepneys and auto calesas and tricycles	2,086	0.2	520	0.4	84,257	192	1,893	2,086	0	0
104	NT	Railway and other road passenger transport	321	0.3	84	0.5	16,092	148	115	263	81	23
105	NT	Road freight transport	8,222	0.3	2,113	0.5	412,603	4,979	2,455	7,434	788	0
106	NT	Ocean (overseas) shipping	1,798	0.2	439	0.5	88,000	1,278	1,289	2,567	67	835
107	NT	inter-island shipping	1,386	0.2	345	0.4	60,430	640	508	1,148	238	0
108	NT	Air transport, domestic and international	2,742	0.2	425	0.5	133,153	457	2,527	2,984	81	324
109	NT	Services incidental to transport	4,414	0.3	1,410	0.6	263,304	1,628	2,457	4,085	567	238
110	NT	Communication services	3,725	0.3	1,108	0.7	248,300	2,443	1,227	3,670	70	16
111	NT	Storage and warehousing	320	0.3	81	0.6	20,393	133	10	143	177	0
112	NT	Wholesale trade	37,012	0.2	9,028	0.8	2,984,515	24,990	5,789	30,779	6,133	0
113	NT	Retail trade	23,196	0.3	6,146	0.7	1,672,472	0	22,846	22,846	0	0
114	NT	Financial institutions (banks and nonbanks)	11,511	0.2	2,433	0.8	885,717	6,343	4,718	11,061	193	0
115	NT	Insurance, life and nonlife	2,922	0.3	818	0.8	232,773	1,889	1,172	3,060	39	177

Table 17 *continued*

	Sector	Q _{bj}	e _j	L _j	V _j	Y _{bj}	I _{bj}	F _{bj}	T _{bj}	X _{bj}	M _{bj}
116	NT Real estate	4,556	0.2	713	0.7	332,925	1,652	2,903	4,555	1	0
117	NT Ownership of dwellings	6,739	0.0	0	1.0	673,857	0	6,739	6,739	0	0
118	NT Government services	12,528	1.0	12,528	1.0	1,252,786	0	12,528	12,528	0	0
119	NT Private education service	2,741	0.5	1,400	0.7	191,215	447	2,294	2,741	0	0
120	NT Private health services	4,614	0.3	1,230	0.6	282,064	427	4,201	4,628	0	15
121	NT Hotels and other lodging places	2,685	0.2	519	0.4	115,457	538	596	1,134	2,134	583
122	NT Restaurants and other eating and drinking places	7,059	0.2	1,117	0.2	167,347	1,447	4,514	5,961	1,515	416
123	NT Business services	7,977	0.3	2,711	0.7	560,539	7,115	696	7,810	4,799	4,632
124	NT Recreational and cultural services	2,528	0.2	422	0.4	112,922	772	1,407	2,179	546	197
125	NT Personal and household services	2,934	0.4	1,275	0.7	197,949	134	1,385	1,519	1,416	0
126	NT Other social and related community services	3,374	0.5	1,631	0.8	259,859	72	1,968	2,040	1,334	0
127	NT National industry	0	0.0	0	1.0	0	0	0	0	0	0
	Total										
	03-96	526,971	0.0	114,015	0.0	26,029,348	270,603	298,698	569,300	66,690	94,150
	03-22	96,143	0.0	33,868	0.0	7,096,729	59,786	36,003	95,790	3,493	3,602
	03-13	64,695	0.0	24,875	0.0	4,568,510	46,964	18,609	65,573	2,417	3,472
	19-20	20,410	0.0	6,383	0.0	1,647,499	4,825	15,064	19,889	232	8
	21-22	11,037	0.0	2,609	0.0	880,720	7,997	2,331	10,328	844	121
	23-27	9,351	0.0	2,130	0.0	459,503	16,475	2,056	18,532	6,192	20,274
	28-96	207,883	0.0	20,156	0.0	4,907,748	127,231	128,108	255,339	36,140	62,657
	28-45	91,121	0.0	7,300	0.0	2,403,285	29,067	56,409	85,476	12,427	3,400

Table 17 continued

Sector	Q _{bj}	e _j	L _j	V _j	Y _{bj}	I _{bj}	F _{bj}	T _{bj}	X _{bj}	M _{bj}
46-50	10,054	0.0	1,034	0.0	401,727	3,123	7,488	10,611	78	227
51-55	20,486	0.0	3,759	0.0	591,288	5,764	12,620	18,384	6,216	3,415
56-58	11,243	0.0	1,072	0.0	226,620	6,394	1,945	8,339	2,904	17
59-66	8,360	0.0	969	0.0	34,293	8,408	3,620	12,029	615	2,262
67-75	10,341	0.0	1,068	0.0	75,746	14,969	5,387	20,356	658	10,289
76-79	3,740	0.0	376	0.0	70,658	4,247	724	4,972	195	234
80-82	10,521	0.0	627	0.0	113,164	17,532	2,665	20,197	1,376	7,375
83-91	17,243	0.0	3,029	0.0	392,003	9,278	28,024	37,302	8,131	28,715
92-95	3,313	0.0	634	0.0	25,934	2,066	2,556	4,621	2,080	2,510

- Q_{bj} = output
- e_j = labor coefficient
- L_j = wage bill
- V_j = value-added
- Y = real income
- I_{bj} = intermediate demand: $I_{dj}/1+t_{ii}$
- DFD = derived final demand: $(DFD)_j/1+t_j$
- X_{bj} = exports: $X_{dj}/1+t_{jx}$
- M_{bj} = imports: $M_{dj}/1+t_{jm}$

Trade deficit in 1983 in peso border price is P27,487,159,000 or \$2,469,645,912.

Equation (1.11) is a restatement of equation (1.10) for estimation purposes. For similar reasons, the remaining equations of the model are restated for proper variable specification. The change in output of sector j in peso border price, dQ_{bj} , is the product of supply elasticity, b_j , real output before trade reform of sector j in peso border price, Q_{bj} , and the proportionate change in the effective price, \hat{V}_j , equal to $(E_j^1 - E_j^0)/(1 + E_j^0)$.

$$dQ_{bj} = b_j Q_{bj} (E_j^1 - E_j^0) / (1 + E_j^0) \quad (1.11)$$

Q_{bj} , the real output in 1983 peso border price of sector j , is used as the pre-trade reform real level of output. The output values in the 1983 I-O table are in domestic prices, Q_{dj} s; to convert Q_{dj} s to 1983 peso border price, 1983 implicit tariffs from price comparisons were used as deflators (Table 18). For mixed sectors (MW), Q_{dj} was distributed, first, according to these assumptions: in most cases, exportable output (Q_{dx}) of mixed sectors is equal to three times the value of exports (X_{dj}); while importable output (Q_{dm}) is the difference between Q_{dj} and Q_{dx} . For special cases, the assumptions are found in the footnotes to Table 18. After the distribution, Q_{dx} and Q_{dm} are then converted to border prices.

E_j^0 , the EPR of sector j prior to trade reform, is the EPR in 1990, and E_j^1 , the EPR of sector j after trade reform, is the EPR in 1995. Two models are used to calculate the EPR, one using tariff and taxes and the other, using price comparisons (Table 16). The use of EPR calculated from price comparisons allows the study to assess the impact of lifting QRs on the economy using the same model.

In the actual estimation of equation (1.11) assuming a fixed real exchange rate, there are four possible cases: first, A, supply elasticities of 0.5 and 0.8 for the primary and manufacturing sectors, respectively, using sectoral EPRs calculated from tariffs and taxes; second, B, the same supply elasticities in A but with sectoral EPRs calculated from price comparisons; third, C, supply elasticities of 0.8 and 1.5 for the primary and manufacturing sectors, respectively, together with relative EPRs using tariffs and taxes; fourth, D, supply elasticities similar to



Table 18

1983 Output for Purely Importable, Exportable and Mixed Sectors

I-O	Type	Sector	Qbj (‘000)	Qdj (‘000)	Xdj (‘000)	Mdj (‘000)	1983 Tj	1983 Tii
03	PM	Corn	3,398	5,079	1	882	49.5	68.8
04	PX	Coconut, copra made in farms	7,206	6,558	42	0	-9.0	-9.0
06	PX	Banana	3,382	3,349	991	0	-1.0	-1.0
07	PX	Other fruits and nuts	6,099	6,160	212	23	1.0	1.0
08	PM	Vegetables	4,228	7,083	13	127	67.6	18.1
10	MW		207	293	0	0	41.2	41.2
10	MX	Tobacco	304	307 ¹	307	0	1.0	41.2
10	MM		0	0	0	607	46.3	41.2
11	MW		1,177	1,328	0	0	12.8	4.0
11	MX	Fiber crops	1,279	1,240 ²	244	0	-3.0	4.0
11	MM		54	88	0	352	63.6	4.0
12	PX	Coffee and cacao	2,558	2,532	427	153	-1.0	-1.0
13	PM	Other commercial crops, n.e.c.	1,078	1,667	55	1,665	54.5	23.8
19	MW		7,860	8,487 ³	0	0	8.0	8.0
19	MX	Commercial fishing, offshore and coastal	6,858	6,789	44	0	-1.0	8.0
19	MM		1,007	1,697	0	6	68.5	8.0
20	MW		12,528	13,059 ³	0	0	4.2	4.2
20	MX	Inland fishing and other fishery activities	10,997	10,447	178	0	-5.0	4.2

Table 18 *continued*

I-O	Type	Sector	Qbj (‘000)	Qdj (‘000)	Xdj (‘000)	Mdj (‘000)	1983 Tj	1983 Tii
20	MM		1,548	2,612	0	8	68.8	4.2
21	PX	Logging	10,682	8,653	679	0	-19.0	-19.0
22	PM	Other forestry activities	355	562	7	121	58.3	23.8
23	PX	Gold and other precious metals	4,278	4,278	3,466	2	0.0	0.0
24	PX	Copper ore	2,647	2,647	2,351	0	0.0	0.0
25	PX	Other metallic mining	589	589	325	30	0.0	0.0
26	PM	Sand, stone and clay quarrying	1,246	1,672	19	122	34.2	23.8
27	PM	Other nonmetallic mining and quarrying	590	833	34	20,130	41.3	40.3
28	PM	Rice and corn milling	25,764	26,279	0	0	2.0	2.0
29	PX	Sugar milling and refining	6,223	6,347	2,894	6	2.0	2.0
30	PM	Milk processing	2,327	3,011	27	1,226	29.4	18.1
31	PM	Other dairy products	942	1,411	3	317	49.8	23.8
32	PX	Crude coconut, vegetable and animal oils and fats	12,680	12,680	5,401	248	0.0	0.0
33	PM	Refined (cooking) oil and margarine	3,374	7,271	16	188	115.5	68.8
34	PM	Slaughtering and meat packing plants	10,604	17,827	5	163	68.1	18.1
35	PM	Meat processing	1,048	2,005	1	1	91.2	68.8
36	PM	Flour and other grain mill	3,453	6,934	8	385	100.8	27.5
37	MW		5,079	6,869 ^c	0	0	35.3	11.6
37	MX	Animal feeds	2,159	2,224	741	0	3.0	11.6
37	MM		3,091	4,646	0	1,026	50.3	11.6

Table 18 *continued*

I-O	Type	Sector	Qbj ('000)	Qdj ('000)	Xdj ('000)	Mdj ('000)	1983 Tj	1983 Tii
38	MW		2,544	3,241 ^d	0	0	27.4	16.4
38	MX	Fruit and vegetable preserves	2,557	2,711	904	0	6.0	16.4
38	MM		216	530	0	129	145.2	16.4
39	MW		5,336	6,314 ^e	0	0	18.3	18.3
39	MX	Fish preparations	4,510	4,735	1,237	0	5.0	18.3
39	MM		953	1,578	0	85	65.7	18.3
40	MW		3,897	6,818 ^d	0	0	75.0	16.9
40	MX	Bakery products including noodles	335	352	117	0	5.0	16.9
40	MM		3,598	6,466	0	65	79.7	16.9
41	MW		1,861	3,110 ^d	0	0	67.1	67.1
41	MX	Cocoa products and confectionery	716	788	263	0	10.0	67.1
41	MM		1,217	2,322	0	71	90.8	67.1
42	MW		1,115	2,461 ^d	0	0	120.7	67.3
42	MX	Coffee, ground or instant	50	55	18	0	10.0	67.3
42	MM		1,073	2,406	0	1	124.3	67.3
43	PX	Desiccated coconut	1,724	1,724	887	3	0.0	0.0
45	MW		2,072	3,470 ^d	0	0	67.5	23.8
45	MX	Miscellaneous food manufacture	389	428	143	0	10.0	23.8
45	MM		1,722	3,042	0	135	76.6	23.8
46	PM	Wine and liquor	880	1,609	51	167	82.9	82.9
47	MW		1,718	2,058 ^b	0	0	19.8	19.8
47	MX	Brewery and malt products	1,599	1,652	22	0	15.8	19.8

Table 18 *continued*

I-O	Type	Sector	Qbj (‘000)	Qdj (‘000)	Xdj (‘000)	Mdj (‘000)	1983 Tj	1983 Tii
47	MM		120	206	0	2	71.3	19.8
49	PM	Cigars and cigarettes	3,369	6,120	11	56	81.6	81.6
50	PX	Tobacco leaf processing	1,760	1,870	1	0	6.3	6.3
51	PM	Textile mill products	5,347	9,486	161	2,062	77.4	44.4
52	MW		1,918	3,116 ⁷	0	0	62.5	57.5
52	MX	Knitting mill products	1,496	1,646	1,646	0	10.0	57.5
52	MM		865	1,471	0	1,616	70.1	57.5
53	MW		1,205	1,894 ⁴	0	0	57.1	34.0
53	MX	Other made-up textile goods	1,130	1,243	414	0	10.0	34.0
53	MM		302	651	0	421	115.5	34.0
54	PX	Wearing apparel	9,701	10,671	3,29 ⁵	189	10.0	10.0
55	PX	Footwear except rubber, plastic or wooden	1,645	1,809	1,322	103	10.0	10.0
56	PX	Lumber, rough or worked	5,957	6,315	1,356	8	6.0	6.0
57	PX	Veneer and plywood	3,998	4,238	1,447	0	6.0	6.0
58	PX	Other wood, cork and cane products	1,288	1,417	285	16	10.0	10.0
59	PM	Pulp, paper and paperboard	869	1,452	99	1,135	67.1	23.8
60	PM	Converted paper and paperboard products	745	2,121	23	170	184.8	23.8
61	PM	Publishing and printing	1,380	2,250	33	242	63.0	23.8
62	MW		197	550 ⁷	0	0	179.3	23.8
62	MX	Leather and leather products	302	302	302	0	0.0	23.8

Table 18 *continued*

I-O	Type	Sector	Qbj (‘000)	Qdj (‘000)	Xdj (‘000)	Mdj (‘000)	1983 Tj	1983 Tii
62	MM		83	248	0	510	197.0	23.8
63	PM	Rubber tires and tubes	1,147	2,321	5	163	102.3	46.3
64	PM	Rubber footwear	340	575	13	22	68.8	68.8
65	PM	Other rubber products	279	424	16	290	52.2	23.8
66	MW		3,175	5,135 ^d	0	0	61.7	23.8
66	MX	Fabricated plastic products	422	464	155	0	10.0	23.8
66	MM		2,793	4,671	0	115	67.2	23.8
67	PM	Drugs and medicines	3,419	4,552	66	836	33.1	23.8
68	PM	Basic industrial chemicals	1,044	2,766	384	3,742	165.0	23.8
69	PM	Fertilizer	1,298	1,691	0	1,156	30.2	23.8
70	PM	Plastic materials	871	1,228	94	2,670	41.0	23.8
71	PM	Pesticides, insecticides, etc.	523	849	14	147	62.4	35.0
72	PM	Paints, varnish and related compounds	1,265	1,936	5	236	53.0	23.8
73	PM	Soap and synthetic detergents	1,608	2,697	7	90	67.8	46.3
74	PM	Cosmetics and toilet preparations	151	591	47	221	291.0	143.8
75	PM	Other chemical products	163	1,244	107	1,193	665.5	23.8
76	PM	Products of petroleum, coke and coal	21,462	38,884	1,607	4,214	81.2	17.6
77	MW		1,947	3,513 ^d	0	0	80.4	56.6
77	MX	Cement	159	167	56	0	5.0	56.6
77	MM		1,808	3,346	0	17	85.1	56.6
78	PM	Glass and glass products	1,167	2,144	37	175	83.8	23.8
79	MW		475	1,690 ^d	0	0	255.9	23.8



Table 18 *continued*

I-O	Type	Sector	Qbj (‘000)	Qdj (‘000)	Xdj (‘000)	Mdj (‘000)	1983 Tj	1983 Tii
79	MX	Other nonmetallic mineral products	324	357	119	0	10.0	23.8
79	MM		281	1,333	0	238	374.0	23.8
80	PM	Primary iron and steel products	7,643	10,324	295	4,366	35.1	12.5
81	MW		246	315 ⁴	0	0	28.3	18.1
81	MX	Nonferrous basic metal products	143	158	158	0	10.0	18.1
81	MM		121	158	0	174	30.4	18.1
82	PM	Fabricated metal products	2,614	7,214	95	2,134	176.0	23.8
83	PM	Machinery and equipment except electrical	6,939	9,292	292	9,648	33.9	23.8
84	PM	Electric industrial machinery and equipment	498	638	0	5,255	28.1	23.8
85	PM	Electrical appliances and houseware	996	2,640	164	483	165.0	44.4
86	PM	Batteries	1,194	1,999	23	43	67.5	23.8
87	PM	Wires and wiring devices	713	975	101	599	36.9	23.8
88	PX	Semi-conductor devices	3,332	3,666	2,588	1,568	0.0	0.0
89	PM	Miscellaneous electrical equipment, supplies and accessories	1,429	2,011	42	1,965	40.7	23.8
90	PM	Motor vehicles	875	2,662	2	858	204.0	95.9
91	PM	Other transport equipment, supplies and accessories	1,267	1,723	253	3,263	36.0	23.8
92	PX	Furnitures and fixtures, primarily of wood	1,170	1,170	700	11	0.0	0.0

Table 18 continued

I-O	Type	Sector	Qbj (‘000)	Qdj (‘000)	Xdj (‘000)	Mdj (‘000)	1983 Tj	1983 Tii
93	PM	Furnitures and fixtures, primarily of metal	51	170	2	4	233.2	44.4
94	PM	Musical instruments	165	309	2	40	87.7	44.4
95	PM	Artists' and office supplies	264	430	1	62	63.1	35.0
96	PM	Miscellaneous manufactures, n.e.c. and scrap	1,663	3,034	1,513	2,397	82.5	23.8

Qbj = Value of output in 1983 i-O Table at border prices; = (Qdj/1+Tj)

Qdj = Value of output in 1983 i-O at domestic prices

Xdj = Value of exports in domestic prices

Mdj = Value of imports in domestic prices

MW = Mixed Sector

MX = Exportable component of MW

MM = Importable component of MW

PX = Purely exportable sector

PM = Purely importable sector

Tj = Implicit tariff on the output

Tii = Implicit tariff on the input

¹Since Qdj > Xdj, Qdj = Xdj.

²Importable output (Qdm) = 25 percent of Mdj; Exportable output (Qdx) = Qdj - Qdm; Qdm + Qdx = Qdj.

³Qdx = 80 percent of Qdj; Qdm = 20 percent of Qdj.

⁴Qdx = 3 Xdj; Qdm = Qdj - Qdx.

⁵Qdx = 75 percent of Qdj; Qdm = 10 percent of Qdj.

⁶Qdx = 90 percent of Qdj; Qdm = 10 percent of Qdj.

⁷Qdx = Qdj; Qdm = Qdj - Qdx.

those in C but with relative EPRs calculated from price comparisons.²¹ Then, it follows that the remaining equations will also have four different sets of results from the four cases of equation (1.11).

Producers can respond to sectoral rather than relative EPR because, first, access to information is asymmetric and, therefore, information is imperfect. Second, when producers form their own expectations based on past experiences regarding trade reform in particular or policy reform in general, it may not change their behavior because the reform is perceived as neither binding nor permanent. Nevertheless, protection is really relative because the trade regime cannot protect all sectors; it can only be done at the expense of other sectors. To test for both types of producer behavior, sectoral and relative EPR²² are used (see Table 16 for the data). The supply response of the economy can improve over time because of better infrastructure and increased capital stock. To test for the sensitivity of the results to changes in supply elasticities, two sets of values were used: lower elasticities with sectoral EPR and higher elasticities with relative EPR.

In making comparisons across variables, across sectors and among equations, it would be more meaningful to use rates of change rather than absolute changes. Hence, after the changes have been estimated, the final results can be expressed as rates of change. The rate of change in output for sector j , \hat{Q}_{bj} , is (dQ_{bj}/Q_{bj})

$$\hat{Q}_{bj} = dQ_{bj}/Q_{bj} \quad (1.12)$$

Rates of change are presented for the entire economy, major sectors and major groups in manufacturing. The rate of change in

21. Since the PX sectors of 51-55 and 88 are those which are very likely to receive duty drawbacks, the EPR used for these sectors assumed that the implicit tariffs on their respective inputs were zero.

22. The relative EPR of sector j is the ratio of EPR of sector j and the weighted average EPR (EPR_w).

output for any particular group follows this rule: the rate of change in output for the group is defined as the sum of changes in output for the group (ΣdQ_{bj}) over the sum of output before trade reform for the same group (ΣQ_{bj}), i.e., the j s are the same. For the following six specific groups, the sum of output for the respective group includes nontraded sectors. First, for the entire economy, ΣQ_{bj} is where $j=1,2,3,\dots,146$.²³ The free-trade value of output of nontraded sectors is simply deflated by the standard conversion factor (SCF) which is the shadow exchange rate. SCF was estimated to be 40 percent in 1983.²⁴ Second, for agriculture, fishing and forestry, ΣQ_{bj} is where $j=1,2,3,\dots,26$. Third, for agriculture, ΣQ_{bj} is where $j=1,2,3,\dots,15$. Fourth, for the entire manufacturing sector, ΣQ_{bj} is where $j=28,29,30,\dots,96$. Fifth, for food processing, ΣQ_{bj} is where $j=28,29,30,\dots,45$. Sixth, for beverages and tobacco, ΣQ_{bj} is where $j=46,47,48,\dots,50$. This convention is consistently adopted in estimating the rates of change for all major groups in all of the remaining equations (Table 17).

Equation (2.2) actually estimates the change in the wage bill in border price, dL_{bj} , rather than the level of employment, because data on employment are not given in the 1983 I-O table. It is the product of e_j (salaries and compensation per peso output given in the 1983 I-O table) and dQ_{bj} .²⁵ The rate of change in the wage bill of sector j , \hat{L}_{bj} , is (dL_{bj}/L_{bj}) , equation (2.3).

$$dL_{bj} = e_j dQ_{bj} \quad (2.2)$$

23. There are 146 sectors rather than 127 because each mixed sector is divided into an importable and exportable component.

24. See Appendix 1 for the data and the computation.

25. e_j should have been in border prices too, i.e., salaries and compensation should have been converted to border price first, then expressed as a ratio of output in border price. Converting salaries and compensation to border prices was not necessary since e_j is a pure number.

$$\hat{L}_{bj} = dL_{bj}/L_{bj} \quad (2.3)$$

The total wage bill (ΣL_{bj}) includes the wage from nontraded sectors; it is taken as the product of e_j and the output of the nontraded sector in peso border prices. The rates of change for different sub-groups follow the same convention established for equation (1.11).

In equation (3.2), the change in real income of sector j , dY_{bj} , is estimated as the product of the free trade value-added of traded sector j , $(V_j)^T_{ft}$, and the change in real output of traded sector j , $(dQ_{bj})^T$.

$$dY_{bj} = (V_j)^T_{ft} * d(Q_{bj}) \quad (3.2)$$

$(V_j)^T_{ft}$, which represents the returns to primary factors excluding nontraded goods, has to be derived since value-added given in the 1983 I-O table is in domestic price. (See Table 17 for the estimated $(V_j)^T_{ft}$.) In equation form,

$$(V_j)^T_d = 1 - \Sigma(a_{ij})^{NT}_d - \Sigma(a_{ij})^T_d \quad (3.21)$$

$$(V_j)^T_{ft} = 1/(1+T_j) - \Sigma(a_{ij})^{NT}_d/(1+SCF) - \Sigma(a_{ij})^T_d/(1+T_i) \quad (3.22)$$

$$(V_j)^T_{ft} = 1 - \Sigma(a_{ij})^{NT}_d * (1+T_j/1+SCF) - \Sigma(a_{ij})^T_d * (1+T_j/1+T_i) \quad (3.23)$$

$$(V_j)^T_{ft} = 1 - \Sigma(a_{ij})^{NT}_{ft} - \Sigma(a_{ij})^T_{ft} \quad (3.24)$$

where $(V_j)^T_d$ is value-added per unit output of traded sector j in domestic prices, $\Sigma(a_{ij})^{NT}_d$ is the sum of the technical coefficients using nontraded inputs in domestic prices, $\Sigma(a_{ij})^T_d$ is the sum of the technical coefficients using traded inputs in domestic prices, $(V_j)^T_{ft}$ is free trade value-added per unit output of traded sector j , T_j is the implicit tariff rate on output, T_i is the implicit rate on input of sector j , and T_j and T_i are computed from price comparisons.

Equations (3.21) and (3.22) define the value-added of traded sector j in domestic prices and free trade prices, respectively;

nevertheless, equation (3.23) is used because the computational requirements are less than those for equation (3.22). Using equation (3.23) involves two steps: first, the derivation of the free trade value of a_{ij} s of traded sectors using traded inputs equal to $(a_{ij})_d^T * (1 + T_j / 1 + T_i)$; second, the derivation of the free trade value of a_{ij} s of traded sectors using nontraded inputs equal to $(a_{ij})_d^{NT} * (1 + T_j / 1 + SCF)$.

For mixed sectors, MW, there is only one coefficient in domestic prices in the original I-O table; an additional computation was done to derive the a_{ij} for the importable and exportable components. The free trade coefficient of the importable component $(a_{ijm})_{ft}^T$ follows equation (3.23). The free trade coefficient of the exportable component, $(a_{ijx})_{ft}^T$, can be derived in an easier manner as shown by the following equations. It follows from equations (3.23) and (3.24) that,

$$(a_{ijm})_{ft}^T = (a_{ijm})_d^T * (1 + T_{jm} / 1 + T_i) \quad (3.23.1)$$

$$(a_{ijx})_{ft}^T = (a_{ijx})_d^T * (1 + T_{jx} / 1 + T_i) \quad (3.23.2)$$

$$\text{or} \quad (a_{ijm})_{ft}^T / (1 + T_{jm}) = (a_{ijm})_d^T / (1 + T_i) \quad (3.23.3)$$

$$(a_{ijx})_{ft}^T / (1 + T_{jx}) = (a_{ijx})_d^T / (1 + T_i) \quad (3.23.4)$$

$(a_{ijx})_d^T = (a_{ijm})_d^T$, since there is only one coefficient for a mixed sector in domestic price; then,

$$(a_{ijx})_{ft}^T = (a_{ijm})_{ft}^T * (1 + T_{jx} / 1 + T_{jm}) \quad (3.23.5)$$

Equation (3.23.5) is used to derive the free trade coefficient of the exportable component of mixed sectors. T_{jx} is the implicit rate on the output of the exportable component and T_{jm} the implicit rate on the output of importable sector j . Once this is done for all mixed sectors, the original 85 by 85 matrix of technical coefficients for traded sectors expands to 85 by 104. This is done for consistency with the sectors in equation (1.11).

The rate of change in real income of traded sector j , \hat{Y}_{bj}^T , is $d(Y_{bj})^T / (Y_{bj})^T$ (equation 3.3). The rates of change for the sub-groups follow the convention established for equation (1.11).

$$\hat{Y}_{bj} = dY_{bj}/Y_{bj} \quad (3.3)$$

Income from traded sector j , Y_{bj}^T , is real income in 1983 peso border price for traded sector j taken as the product of $(V_j)^T_{ft}$ and $(Q_{bj})^T$, and total income from traded sectors, $\Sigma(Y_{bj})^T$ is equal to $\Sigma(V_j)^T_{ft} * (Q_{bj})^T$, the first component of equation (3.4).

$$\Sigma Y_b = \Sigma(V_j)^T_{ft} * (Q_{bj})^T + \Sigma(V_j)^{NT}_{ft} * (Q_{bj})^{NT} \quad (3.4)$$

The rate of change of real income for the entire economy due to trade reform, \hat{Y}_b , shown in equation (3.5) is the ratio of ΣdY_{bj} , the change in income from traded sectors over total income, ΣY_b . Income from the nontraded sector in border prices should also be estimated.

$$\hat{Y}_b = \Sigma dY_{bj} / \Sigma Y_b \quad (3.5)$$

In equation (3.4), ΣY_b is income from all sectors, traded and nontraded, i.e., $j=1,2,3,\dots,146$. $(Y_{bj})^{NT}$, the real income of nontraded sector j in border price, is estimated by using equation (3.29) which is derived as follows:

$$(Y_{bj})^{NT} = (V_j)^{NT}_{ft} * (Q_{bj})^{NT} \quad (3.25)$$

$$(V_j)^{NT}_{ft} = 1 - \Sigma(a_{ij})^{NT}_d - \Sigma(a_{ij})^T_d \quad (3.26)$$

$$(V_j)^{NT}_{ft} = 1/(1+SCF) - \Sigma(a_{ij})^{NT}_d/(1+SCF) - \Sigma(a_{ij})^T_d/(1+T_j) \quad (3.27)$$

$$(V_j)^{NT}_{ft} = 1 - \Sigma(a_{ij})^{NT}_d - \Sigma(a_{ij})^T_d * (1+SCF/1+T_j) \quad (3.28)$$

$$\Sigma(Y_{bj})^{NT} = \Sigma(V_j)^{NT}_{ft} * (Q_{bj})^{NT} \quad (3.29)$$

where $(V_j)^{NT}_{ft}$ is value-added per unit output in free trade price of nontraded sector j , $(V_j)^{NT}_d$ is value-added per unit output in domestic prices of nontraded sector j , $(a_{ij})^{NT}_d$ is the technical coefficient of a nontraded input of sector j in domestic price, and $(a_{ij})^T_d$ is the technical

coefficient of a traded input of sector j in domestic price. Equation (3.28) was used in lieu of equation (3.27) because it is one step simpler. Total income for the nontraded sectors in 1983 peso border price, $\Sigma(Y_{bj})^{NT}$, is equal to $\Sigma(V_j)^{NT} * (Q_{bj})^{NT}$. (See equation 3.29 and Table 17.)

Equation (4.2) estimates the change in the intermediate demand of sector j , dI_{bj} , as the product of the coefficient a_{ji} , the amount of input j per peso of output i in free trade prices and the change in the supply of output i , dQ_{bi} , due to trade reform.

$$dI_{bj} = \Sigma a_{ji} * Q_{bi} \quad (4.2)$$

The size of the matrix of technical coefficients after the column expansion was done for mixed sectors stood at 85×104 ; hence, a_{ij} is an 85×104 matrix. Nevertheless, Q_{bi} is a 104×1 matrix, so that dI_{bj} will be 85×1 which is not consistent with the matrix size of equation (1.1). The matrix of technical coefficients should be 104×104 to get a dI_{bj} equal to 104×1 . This means adding 19 more rows to the 85×104 matrix.

To get 19 additional rows, the a_{ijs} of mixed sectors were weighted by their respective shares in output: $(a_{jix})_{ft} = (a_{ji})_{ft} * w_x$, $(a_{jim})_{ft} = (a_{ji})_{ft} * w_m$; $W_x = Q_x / (Q_x + Q_m)$ and $W_m = Q_m / (Q_x + Q_m)$. This expands the matrix of technical coefficients to a 104×104 . Since the technical coefficients were already weighted, there is a need to weigh the change in intermediate demand of mixed sectors.

The rate of change of intermediate demand of sector j , \hat{I}_{bj} , is the ratio of dI_{bj} and I_{bj} (equation 4.3) which is the intermediate demand in 1983 I-O table of sector j converted to free trade prices by using implicit tariffs on inputs as deflators.

$$\hat{I}_{bj} = dI_{bj} / I_{bj} \quad (4.3)$$

To get the rate of change in intermediate demand for the entire economy and the different sub-groups, the border value of intermediate demand for nontraded sectors is also needed; this was derived by using the SCF as deflator.²⁶

In estimating equation (5.2), the data for final demand were first adjusted.

$$dF_{bj} = [G_{jj} * (\hat{T}_j) + K_j(\hat{Y}_b)]F_{bj} \quad (5.2)$$

For a purely importable sector, PM, final demand is equal to $F_{dj} + M_{dj}$, where F_{dj} is final demand and M_{dj} is imports of sector j in the I-O table in domestic prices; for a purely exportable sector, PX, final demand is $F_{dj} - X_{dj}$, where X_{dj} is exports in the I-O in domestic prices. For mixed sectors, final demand in the I-O is distributed by using supply weights: the weight for an exportable sector j is $S_x = Q_{dx} - X_{dj} / (Q_{dx} + Q_{dm} - X_{dj} + M_{dj})$; the weight for an importable sector is $S_m = (Q_{dm} + M_{dj}) / (Q_{dx} + Q_{dm} - X_{dj} + M_{dj})$. Then, the final demand is adjusted as follows: for an exportable sector, it is $F_{dj} * S_x - X_{dj}$; for an importable sector j , it is $F_{dj} * S_m + M_{dj}$. If the derived or adjusted final demand is less than zero, final demand is set to zero. The derived values are then converted to border value by using the 1983 implicit tariffs as deflators (Table 16).

Change in final demand of sector j , dF_{bj} , is estimated as the sum of the direct price and indirect income effects: the price effect is the product of the own-price elasticity of demand, G_{jj} , the proportionate change in the implicit tariff rate T_j and F_{bj} ; the income effect is the product of the proportionate change in income, \hat{Y}_b , the income elasticity K_j and F_{bj} . Change in the price of each sector is assumed to follow the change in implicit tariff rates; G_{jj} is taken from a previous

26. Another method is possible but the computational requirements is more. This involves using equation (4): take the product of aji , a 146×146 matrix, and Q_{bi} , a 146×1 matrix to get the intermediate demand for traded and nontraded sectors. Mathematically, both methods should give the same results.

study.²⁷ The proportionate change in income, \hat{Y}_b , is provided by equation (3.5); K_j is assumed to take on three different values, 0.5, 1.0 and 1.5, depending on the sector. The rate of change in final demand for sector j , \hat{F}_{bj} , is the ratio of dF_{bj} over F_{bj} ,

$$d\hat{F}_{bj} = dF_{bj}/F_{bj} \quad (5.4)$$

In computing the rate of change in the final demand for the entire economy, the final demand of nontraded sectors was also included. Final demand in the I-O of nontraded sectors was used but excludes imports and exports; it is the sum of consumption expenditures, private investment, change in inventories and government expenditures. The border value is derived by using the SCF as deflator (Table 17).

The change in total demand of sector j , dT_{bj} , is the sum of dF_{bj} and dI_{bj} (equation 6.2). The rate of change in total demand of sector j , \hat{T}_{bj} , is the ratio of dT_{bj} over T_{bj} .

$$dT_{bj} = dI_{bj} + dF_{bj} \quad (6.2)$$

$$\hat{T}_{bj} = dT_{bj}/T_{bj} \quad (6.3)$$

The same convention is adopted for computing the rates of change for the entire economy and its major groups. The total demand for nontraded sector j is the sum of the final demand and intermediate demand of nontraded sector j .

The change in imports of sector j , dM_{bj} , is the difference between dT_{bj} and dQ_{bj} (equation 7.2); this is computed for PM and MM sectors only. The rate of change in imports of sector j , \hat{M}_{bj} , is the ratio of dM_{bj}

27. From various sources compiled by the Tariff Commission.

over M_{bj} , which is imports of sector j in 1983 converted to peso border value by using 1983 implicit tariffs as deflators (equation 7.3).

$$dM_{bj} = dT_{bj} - dQ_{bj} \quad (7.2)$$

$$\hat{M}_{bj} = dM_{bj}/M_{bj} \quad (7.3)$$

The change in exports of sector j , dX_{bj} , is the difference between dQ_{bj} and dT_{bj} (equation 8.2); this is computed for PX and MX sectors only. The rate of change in exports of sector j , \hat{X}_{bj} , is the ratio of dX_{bj} over X_{bj} , which is exports of sector j in 1983 converted to peso border value by using 1983 implicit tariffs as deflators (equation 8.3).

$$dX_{bj} = dQ_{bj} - dT_{bj} \quad (8.2)$$

$$\hat{X}_{bj} = dX_{bj}/X_{bj} \quad (8.3)$$

The trade deficit, TD, is the difference between the sum of changes in imports, ΣdM_{bj} , and the sum of changes in exports, ΣdX_{bj} ,

$$TD = \Sigma dM_{bj} - \Sigma dX_{bj} \quad (9.2)$$

SIMULATION MODEL

Equation (1.38) can be estimated only if the value of r_1/r_0 is known. If this is done, the changes in output and the rest of the variables in the model are consistent with the actual level of trade balance. The value of r_1/r_0 can be derived given certain trade balance conditions.²⁸ This is of more interest in trade reform since one of the

28. There are several assumptions here: first, that the change in real exchange rate can actually be achieved. This is not to be construed as taking the real exchange rate as a policy tool; the more reasonable assumption would be that it is the nominal

targets or goals of trade reform is to improve the trade balance.

There are two parts to this simulation exercise: the first part solves for the required change in the real exchange rate that would satisfy certain trade balance conditions; the second part uses the solution from the first part and proceeds with the estimation of the effects of trade reform assuming a simultaneous adjustment of the real exchange rate.

To find the value of r_1/r_o , use equations (1.38), (3.6), (3.7), (4.4), (5.4), (6.4) and substitute them into equation (8.4). The six equations, excluding (3.7), state the changes in output, real income, intermediate, final, and total demand incorporating real exchange rate adjustment; equation (8.4) states that the sum of the changes in exports is equal to the sum of the changes in output and the sum of the changes in total demand, assuming a flexible real exchange rate. Given,

$$dQ_{bj}^* = b_j Q_{bj} \left[\frac{r_1}{r_o} \left(\frac{1+E_j^1}{1+E_j^o} \right) - 1 \right] \quad (1.38)$$

$$dY_{bj}^* = (V_j)_b^T dQ_{bj}^* \quad (3.6)$$

$$\hat{Y}_b^* = \sum dY_{bj}^* + \sum Y_b \quad (3.7)$$

$$dI_{bj}^* = \sum_{aj} Q_{aj}^* \quad (4.4)$$

$$dF_{bj}^* = [G_{jj}^* (\hat{T}_j) + K_j \hat{Y}_b] F_{bj} \quad (5.4)$$

exchange rate that is a policy tool; second, the character of monetary policy is not inflationary. Achieving a real depreciation means that a nominal devaluation must be accompanied by a monetary policy that sets the domestic inflation rate at no more than the rate of depreciation. These are the two variables that are under the control of domestic policymakers. Actually, a change in the real exchange rate can occur via changes in the nominal exchange rate of the country's trading partners and in their respective domestic inflation rates.

$$dT_{bj}^* = dF_{bj}^* + dI_{bj}^* \quad (6.4)$$

$$\Sigma dX_{bj}^* = \Sigma dQ_{bj}^* - \Sigma dT_{bj}^* \quad (8.4)$$

Equation (1.39) is the sum of equation (1.38) and gives the first term of equation (8.4). Simplify to get equation (1.43).

$$\Sigma dQ_{bj}^* = \Sigma_{bj} Q_{bj} \left[\frac{r_1}{r_0} \left(\frac{1+E_j^1}{1+E_j^0} \right) - 1 \right] \quad (1.39)$$

$$= \frac{r_1}{r_0} \Sigma_{bj} Q_{bj} \left(\frac{1+E_j^1}{1+E_j^0} \right) - \Sigma_{bj} Q_{bj} \quad (1.40)$$

therefore,

$$\text{let } \alpha_x = \Sigma_{bj} Q_{bj} \left(\frac{1+E_j^1}{1+E_j^0} \right) \quad (1.41)$$

$$\beta_x = \Sigma_{bj} Q_{bj} \quad (1.42)$$

$$\Sigma dQ_{bj}^* = \frac{r_1}{r_0} \alpha_x - \beta_x \quad (1.43)$$

The second term of equation (8.4), ΣdT_{bj}^* , which also has two terms, is the sum of intermediate and final demand (equation 6.5). Equation (4.5), the first term of equation (6.5), is the sum of equation

(4.4), which is the sum of all changes in intermediate demand reflecting real exchange rate adjustment. Substitute equation (1.38) into equation (4.5) and simplify it to get equation (4.10).

$$\Sigma dT_{ij}^* = \Sigma dI_{ij}^* + \Sigma dF_{ij}^* \quad (6.5)$$

$$\Sigma dI_{ij}^* = \Sigma_i (\Sigma_j a_{ji} * dQ_{ix}^*) \quad (4.5)$$

$$= \Sigma_i \left(\Sigma_j a_{ji} * b_j Q_{ix} \left[\frac{r_1}{r_0} \left(\frac{1+E_j^1}{1+E_j^0} \right) - 1 \right] \right) \quad (4.6)$$

$$= \frac{r_1}{r_0} \Sigma_i \left[\Sigma_j a_{ji} * b_j Q_{ix} \left(\frac{1+E_j^1}{1+E_j^0} \right) \right] - \Sigma_i \Sigma_j a_{ji} * b_j Q_{ix} \quad (4.7)$$

$$\text{let } \delta_x = \Sigma_i \left[\Sigma_j a_{ji} * b_j Q_{ix} \left(\frac{1+E_j^1}{1+E_j^0} \right) \right] \quad (4.8)$$

$$\epsilon_x = \Sigma_i \Sigma_j a_{ji} * b_j Q_{ix} \quad (4.9)$$

$$\Sigma dI_{ij}^* = \frac{r_1}{r_0} \delta_x - \epsilon_x \quad (4.10)$$

Equation (5.5), the second term of equation (6.5), is the sum of equation (5.4). Substitute equations (1.38), (3.6), (3.7) into equation (5.5) and simplify to get equation (5.12).

$$\Sigma dF_{bj}^* = \Sigma [G_{j\parallel}^* (\hat{T}_j) + K_j (\hat{Y}_b^*)] F_{bj} \quad (5.5)$$

$$= \Sigma G_{j\parallel}^* (\hat{T}_j) * F_{bj} + \Sigma K_j (\hat{Y}_b^*) F_{bj} \quad (5.6)$$

$$\text{let } \gamma_x = \Sigma G_{j\parallel}^* (\hat{T}_j) * F_{bj} \quad (5.7)$$

$$= \gamma_x + \Sigma \left[K_j^* \frac{\left(\frac{r_1 \Sigma V_j^* b_j Q_{bj} \left(\frac{1+E_j^1}{1+E_j^0} \right) - \Sigma V_j b_j Q_{bj} \right)}{\Sigma Y_b} F_{bj} \right] \quad (5.8)$$

$$= \gamma_x + \frac{r_1}{r_0} \Sigma K_j \frac{\Sigma V_j^* b_j Q_{bj} \left(\frac{1+E_j^1}{1+E_j^0} \right)}{\Sigma Y_b} F_{bj} - \Sigma K_j \frac{\Sigma V_j b_j Q_{bj}}{\Sigma Y_b} F_{bj} \quad (5.9)$$

$$\text{let } \rho_x = \Sigma K_j \frac{\Sigma V_j^* b_j Q_{bj} \left(\frac{1+E_j^1}{1+E_j^0} \right)}{\Sigma Y_b} F_{bj} \quad (5.10)$$

$$\theta_x = \sum K_f \frac{\sum V_{fj} Q_{fj} F_{fj}}{\sum Y_b} \quad (5.11)$$

therefore

$$\sum dF_{fj}^* = \gamma_x + \frac{r_1}{r_0} \rho_x - \theta_x \quad (5.12)$$

Then substitute equations (1.43), (4.10) and (5.12) into equation (8.4) to get equation (8.6).

$$\sum dX_{fj}^* = \sum dQ_{fj}^* - \sum dT_{fj}^* \quad (8.4)$$

$$= \frac{r_1}{r_0} \alpha_x - \beta_x - \left[\frac{r_1}{r_0} \delta_x - \epsilon_x + \gamma_x + \frac{r_1}{r_0} \rho_x - \theta_x \right] \quad (8.5)$$

$$\sum dX_{fj}^* = \frac{r_1}{r_0} (\alpha_x - \delta_x - \rho_x) - \beta_x + \epsilon_x - \gamma_x + \theta_x \quad (8.6)$$

Do the same process of substitution and simplification for equation (7.4) to arrive at equation (7.9).

From equation (7.4)

$$\sum dM_{fj}^* = \sum dT_{fj}^* - \sum dQ_{fj}^* \quad (7.4)$$

$$\sum dQ_{fj}^* = \frac{r_1}{r_0} \alpha_m - \beta_m \quad (7.5)$$

$$\Sigma dT_{ij}^* = \Sigma dI_{ij}^* + \Sigma dT_{ij} \quad (7.6)$$

$$= \frac{r_1}{r_0} \delta_m - \epsilon_m + \alpha_m + \frac{r_1}{r_0}(\rho_m) - \theta_m \quad (7.7)$$

therefore

$$\Sigma dM_{ij}^* = \frac{r_1}{r_0} \delta_m - \epsilon_m + \alpha_m + \frac{r_1}{r_0}(\rho_m) - \theta_m - \left[\frac{r_1}{r_0} \alpha_m - \beta_m \right] \quad (7.8)$$

$$\Sigma dM_{ij}^* = \frac{r_1}{r_0}(\delta_m + \rho_m - \alpha_m) - \epsilon_m + \alpha_m - \theta_m + \beta_m \quad (7.9)$$

Then substitute equations (7.9) and (8.6) into equation (9.3) to get equation (9.9). Therefore,

$$TD = \Sigma dM_{ij}^* - \Sigma dX_{ij}^* \quad (9.3)$$

$$= \frac{r_1}{r_0}(\delta_m + \rho_m - \alpha_m) - \epsilon_m + \gamma_m - \theta_m + \beta_m - \frac{r_1}{r_0}(\alpha_x - \delta_x - \rho_x) - \beta_x + \epsilon_x - \gamma_x + \theta_x \quad (9.4)$$

$$\frac{r_1}{r_0}(\delta_m + \rho_m - \alpha_m - \alpha_x + \delta_x + \rho_x) = TD - \beta_x + \epsilon_x - \gamma_x + \theta_x + \epsilon_x - \gamma_m + \theta_m - \beta_m \quad (9.5)$$

$$\frac{r_1}{r_0} = \frac{TD}{\delta_m + \delta_x + \rho_m + \rho_x - \alpha_m - \alpha_x} + \frac{-\beta_x - \beta_m + \epsilon_x + \epsilon_m - \gamma_x - \gamma_m + \theta_x + \theta_m}{\delta_m + \delta_x + \rho_m + \rho_x - \alpha_m - \alpha_x} \quad (9.6)$$

$$\text{let } \alpha_1 = \frac{1}{\delta_m + \delta_x + \rho_m + \rho_x - \alpha_m - \alpha_x} \quad (9.7)$$

$$C = \frac{-\beta_x - \beta_m + \epsilon_x + \epsilon_m - \gamma_x - \gamma_m + \theta_x + \theta_m}{\delta_m + \delta_x + \rho_m + \rho_x - \alpha_m - \alpha_x} \quad (9.8)$$

$$\frac{r_1}{r_0} = \alpha_1 TD + C \quad (9.9)$$

The value of r_1/r_0 can be calculated since all the values on the right-hand side are given. From equation (9.9), the value of r_1/r_0 is equal to a constant C when the desired change in the TD is zero; it increases by the value of alpha if the change in TD is greater than zero; and it decreases by the value of alpha if the change in TD is less than zero. Equation (9.9) also states clearly the relationship between the real exchange rate and the balance of trade: if there is a real depreciation, the TD would decrease.

The assumptions regarding supply elasticities, models used to calculate EPK, price and income elasticities and implicit tariff rates used in the simulation model are the same as in the Chunglee model. Therefore, there will be four estimates of the value of r_1/r_0 corresponding to the different assumptions. Cases E, F, G and H differ from cases A, B, C and D only with respect to the assumption on the real exchange rate. Once the value of r_1/r_0 is known, the changes and the rates of change in the nine variables of the model can then be estimated. There will be four sets of result for each variable corresponding to four estimates of r_1/r_0 .

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Analysis of Results

THIS chapter will analyze the macro effects of E.O. 470 and changes in the exchange rate using the Chunglee and simulation models. It will also compare the results of this study with the TC-CGE model which also analyzes the effects of E.O. 470. It ends with a brief conclusion.

TRADE REFORM AND EXCHANGE RATE POLICY

When trade reform is undertaken given a fixed exchange rate, there are two effects. First, there is a negative output effect. When tariffs are lowered and/or QRs lifted, imports become cheaper relative to their import substitutes;²⁹ this creates a downward pressure on prices, causing output in import-competing sectors to fall. Second, there is a negative trade balance effect: domestic prices of imports (P_m) decrease, causing demand to increase while the domestic prices of exports (P_x) remain constant. The negative trade balance effect can also be due to an expenditure-switching policy without an accompanying expenditure-reducing policy. This means that demand for imports increases without a corresponding rise in the production of exports.³⁰ The increase in the demand for imports puts pressure on

29. This assumes that import-substitutes and imports are homogeneous and, hence, perfectly substitutable.

30. The only way in which trade reform can benefit import-intensive exports is via lower costs of their imported inputs.

the exchange rate. The Central Bank will be able to defend the exchange rate by either drawing down on international reserves, foreign borrowing.³¹ Once both measures are not tenable, the country will be forced to devalue.

When trade reform is complemented by exchange rate adjustment, the negative output effect and trade deficit can be averted; however, the peso should depreciate not only in nominal terms but in real terms as well. Real depreciation implies that a nominal devaluation should be coupled with expenditure-reducing policy to prevent expansionary and/or inflationary effects of devaluation from eroding the price competitiveness brought about by nominal devaluation. The expansionary effect of devaluation is caused by an increase in the demand for nontraded goods as their prices decrease relative to the prices of traded goods. The inflationary effect is through domestic prices: once the currency depreciates, the domestic currency price of traded goods increases, and once this increases by as much as the rate of depreciation, nothing will have been gained. If domestic prices should increase, it should not increase by as much as the rate of depreciation. The expenditure-reducing policy reduces the demand for nontraded goods; this in turn enables resources to shift to the production of traded goods.

Given the trade reform accompanied by an increase in the real exchange rate, the drop in the domestic currency price of imports will be offset by an increase in the real exchange rate; hence, imports could become more expensive relative to their domestic substitutes. Production for importables will increase while demand for imports could drop. Meanwhile, the production for exportables could become more attractive even if their world prices remain unchanged; an increase in the real exchange rate will increase the domestic currency prices of exports given constant world prices. Hence the negative output effect can be averted and the trade balance would improve. The expenditure-reducing policy is implied once the real exchange

31. With a liberalized exchange rate, the CB can defend or induce a lower exchange rate by pursuing a high interest rate policy which encourages capital inflows.

rate is assumed to depreciate; this ensures that expenditures will not be greater than income, ex post devaluation.

The effect of a real depreciation may not be uniform if the trade regime is not relatively free, i.e., if there are prohibitive tariffs and/or binding QRs for certain sectors. The favored sectors will be those where QRs are present for their output and whose imported inputs have been liberalized. Prices and profitability for these types of goods will increase and resources will tend to be shifted to their production.

EFFECTS OF E.O. 470, TRADE AND EXCHANGE RATE LIBERALIZATION

Table 19 shows the general effects of trade reform without any corresponding real exchange rate adjustment: output falls in both cases A and B by 1.1 percent and 0.9 percent, respectively,³² the wage bill, income and intermediate demand also decrease but by less than the drop in output; the decrease in income is less than that of output because, on the average, it is the low-value added sectors that contracted.³³ Since there is an overall drop in output and income, a

32. In cases A and B, the study argues the use of low supply elasticities since producers could not respond immediately to changes in sectoral EPRs by switching to more profitable areas of economic activity since access to information is asymmetric for different agents. Another reason is that the private sector doubts the credibility of trade reform and perceives the change in incentive structure as temporary. Hence, producers do not make the necessary adjustments.

33. For sector j , the rate of change in income is the same as in output. The proof can be shown in the following equations:

$$\begin{aligned}
 Y_{bj} &= V_j Q_{bj} & (1) \\
 dY_{bj} &= V_j dQ_{bj} & (2) \\
 dY_{bj} / Y_{bj} &= (V_j dQ_{bj}) / V_j Q_{bj} & (3) \\
 dY_{bj} / Y_{bj} &= dQ_{bj} / Q_{bj} & (4)
 \end{aligned}$$

Hence, if the growth rate in output is greater than or less than the growth rate of income for a sector group, it can only be due to the differences in value-added of the different sectors.

Table 19
Effects of Trade Reform Assuming Fixed Real Exchange Rate
(For all sectors, in percent)

	A	B	C	D
1 Output				
Importables	-4.3	-3.5	-2.8	-2.3
Exportables	0.6	0.6	5.6	4.6
Total	-1.1	-0.9	0.5	0.4
2 Wage bill				
Importables	-5.0	-5.1	-4.8	-5.9
Exportables	0.7	0.7	5.1	4.3
Total	-0.6	-0.7	0.4	0.0
3 Income				
Importables	-2.6	-2.5	0.1	-0.6
Exportables	0.6	0.6	5.1	4.2
Total	-0.2	-0.2	1.3	1.0
4 Intermediate demand				
Importables	-1.9	-1.3	0.2	0.6
Exportables	-2.1	-2.1	-0.9	-1.5
Total	-1.3	-1.0	-0.0	0.0
5 Final demand				
Importables	2.9	2.6	7.4	6.5
Exportables	-0.2	-0.1	1.0	0.7
Total	1.1	1.0	3.0	2.7
6 Total demand				
Importables	0.4	0.6	3.7	3.5
Exportables	-1.3	-1.2	-0.0	-0.5
Total	-0.0	0.1	1.6	1.4
7 Imports				
Importables	13.1	11.8	23.0	20.8
8 Exports				
Exportables	5.2	5.1	19.5	17.2
9 Trade deficit (\$B)				
Total	2.98	2.92	3.03	3.00

A : Supply elasticity for sectors 3-27 is 0.5 and 0.8 for sectors 28-96; EPR using tariffs and taxes.

B : Supply elasticity similar to that in A but EPRs are from price comparisons.

C : Supply elasticity for sectors 3-27 is 0.8 and 1.5 for sectors 28-96; relative EPRs using tariffs.

D : Supply elasticity similar to that in C but relative EPRs are from price comparisons.

positive resource allocation effect need not necessarily happen. Both imports and exports increase, but the trade deficit increases to \$2.98 billion in case A and \$2.92 billion in case B by 1995³⁴ because final demand grows by 1.1 percent and 1 percent, respectively but income shrinks by 0.2 percent in both instances. The overall increase in final demand is largely due to a positive price effect which is stronger than the negative income effect; without the real exchange rate adjustment, imports become cheaper relative to import substitutes because of lower tariffs. The increase in imports is needed because, as the output of importables drops and total demand increases, excess demand is provided for by an increase in imports. Exports increase because production for exports increase while total demand drops. The trade deficit in case A is greater than in case B because E.O. 470 had more substantial cuts; hence, the former had a greater impact relative to the lifting of QRs.

The overall drop in output in both cases A and B is due to a decrease in their respective weighted EPRs brought about by a reduction in the average level of tariffs, i.e., E.O. 470 and the lifting of QRs lowered prices via lower implicit tariffs, respectively. The drop in case A is greater than in case B because tariff changes in E.O. 470 were more substantial while there was only minimal lifting of QRs such that the change over the same period of time was smaller.³⁵ The level of implicit tariffs from price comparisons relative to book rates remains higher but the change is smaller; hence, the impact on output was smaller.

34. The trade deficit in base year 1983 is P27,487,160,000 in peso border prices (see Table 17 for the data). The increase in the trade deficit in case A is P5,516,758,000 and in case B, P4,578,408,000. At the official exchange rate (OER) of P11.13 to the US dollar in 1983, the trade deficit in case A will be \$2.97 billion and \$2.578 billion in case B by 1995.

35. The assumption here is that once QRs are lifted, a downward pressure on prices will be exerted such that EPRs based on price comparisons would also drop. Nevertheless, it is possible for prices to change in response to other factors other than changes in the trade regime. The argument that there was not much progress in the import liberalization program assumes that there would be no effect on prices too.

In manufacturing, the output of all but two major sectors declined in cases A and B. The greatest negative output effect occurred in these following sectors: paper, rubber, leather and plastic products (sectors 59-66); chemicals and chemical products (sectors 67-75); basic metals and metal products (sectors 80-82); and machinery including electrical and transport equipment (sectors 83-91). The two groups that managed to post positive growth rates were nonmetallic mining (sectors 76-79) which posted 11 percent in case A and 14.3 in case B; and wood and wood products (sectors 56-58) at 3.6 percent in both cases (Table 20).

Table 21 shows the growth rates of income by major groups. The effect on income follows more or less the pattern that emerged in output: if outputs drop, incomes drop also (Table 21). It is possible for a major group to post positive growth rates in income if the income expansion of one sector is more than enough to compensate for the decreases in incomes of other sectors. The major group (59-66) posted an overall drop in output but registered an increase in its income; this is misleading since the positive growth rate is due to a decrease in output and a negative free trade value-added; if free trade value-added of sectors 60, 61 and 63 were set to zero, the growth rate of income in each sector would be negative and the income of this sector would shrink by five percent.³⁶

36. If the value-added of all sectors with $V_j < 0$ were equated to zero, the overall growth rate of income for the entire economy would be -0.27 percent instead of -0.22 percent, an underestimate of about .05 percent. The underestimation comes from the fact that the sectors with negative free trade value-added are also the sectors that experienced decreases in output. This, in turn, understates the estimates in final demand and imports, while it overstates the estimates for exports. The final effect on the trade deficit depends on the actual amount of underestimation and overestimation of imports and exports, respectively.

If all the negative free-trade value-added were equated to zero, only the results of equations 3, 5 to 9 would be affected since the model is recursive rather than simultaneous. Income would be underestimated by a large .05 percent in case A and by as little as .001 percent in case D.

The final effect on the level of trade deficit is an overestimation as small as \$2.9 million or as large as \$5.8 million. The effect on the adjustment in the real exchange rate will be negligible.

Table 20
Effects of Trade Reform on Output Assuming Fixed Real Exchange Rate
(By sector groups, in percent)

	A	B	C	D
03-96 All sectors				
Importables	-4.3	-3.5	-2.8	-2.3
Exportables	0.6	0.6	5.6	4.6
Total	-1.1	-0.9	0.5	0.4
03-22 Agriculture, fishing and forestry				
Importables	-1.1	-2.5	1.2	-1.6
Exportables	0.5	0.5	3.9	3.2
Total	0.1	-0.1	2.2	1.5
23-27 Mining				
Importables	1.9	1.9	6.3	5.6
Exportables	2.6	2.6	7.4	6.7
Total	2.4	2.4	7.2	6.5
28-96 Manufacturing				
Importables	-4.7	-3.7	-3.2	-2.5
Exportables	0.4	0.4	6.7	5.4
Total	-3.0	-2.3	-0.0 ¹	0.0 ¹
03-13 Agriculture				
Importables	-0.1	-1.9	2.9	-0.8
Exportables	0.1	0.1	3.3	2.6
Total	0.0	-0.2	1.5	0.7
19-20 Fishing				
Importables	-3.8	-3.8	-3.3	-3.9
Exportables	0.8	0.8	4.5	3.8
Total	0.2	0.2	3.5	2.8
21-22 Logging and other forestry activities				
Importables	-6.0	-6.0	-6.9	-7.5
Exportables	0.6	0.6	4.1	3.4
Total	0.4	0.4	3.8	3.1
28-45 Food processing				
Importables	-6.3	-6.1	-6.4	-7.1
Exportables	-0.3	-0.3	5.3	4.1
Total	-4.2	-4.0	-2.3	-3.2
46-50 Beverages and tobacco				
Importables	-0.8	-0.8	4.2	3.0
Exportables	-3.5	-3.5	-0.9	-2.1
Total	-1.5	-1.5	1.5	0.6

Table 20 *continued*

	A	B	C	D
51-55 Textile and footwear				
Importables	-20.7	-20.7	-34.5	-35.5
Exportables	0.0	0.0	5.8	4.6
Total	-6.6	-6.6	-7.0	-8.2
56-58 Wood and wood products				
Importables	0.0	0.0	0.0	0.0
Exportables	3.6	3.6	12.8	11.5
Total	3.6	3.6	12.8	11.5
59-66 Paper, rubber, leather and plastic products				
Importables	-10.2	-10.2	-14.0	-15.1
Exportables	-0.6	-0.6	4.7	3.4
Total	-9.4	-9.4	-12.4	-13.5
67-75 Chemicals and chemical products				
Importables	-9.4	-4.4	-12.5	-4.0
Exportables	0.0	0.0	0.0	0.0
Total	-9.4	-4.4	-12.5	-4.0
76-79 Nonmetallic mineral products				
Importables	10.8	14.3	26.9	32.3
Exportables	14.2	14.2	33.6	32.0
Total	10.9	14.3	27.0	32.3
80-82 Basic metals and metal products				
Importables	-8.3	-8.3	-10.3	-11.5
Exportables	6.2	6.2	17.8	16.4
Total	-8.1	-8.1	-9.9	-11.1
83-91 Machinery including electrical and transport equipment				
Importables	-8.6	-9.7	-10.9	-14.1
Exportables	0.0	0.0	5.8	4.6
Total	-6.9	-7.8	-7.6	-10.5
92-96 Miscellaneous manufactures				
Importables	-10.3	-10.3	-14.3	-15.4
Exportables	1.1	1.1	7.9	6.6
Total	-6.3	-6.3	-6.4	-7.6

* Assumptions for cases A, B, C and D are similar to those in Table 19.

¹In case C, the rate is -0.03 percent and in case D, the rate is 0.04 percent.

Table 21
Effects of Trade Reform on Income Assuming Fixed Real Exchange Rate
(By sector groups, in percent)

	A	B	C	D
03-96 All sectors				
Importables	-2.6	-2.5	0.1	-0.6
Exportables	0.6	0.6	5.1	4.2
Total	-0.2	-0.2	1.3	1.0
03-22 Agriculture, fishing and forestry				
Importables	-1.3	-2.7	1.0	-1.9
Exportables	0.5	0.5	3.9	3.2
Total	0.1	-0.1	2.3	1.5
23-27 Mining				
Importables	2.3	2.3	7.0	6.3
Exportables	2.5	2.5	7.2	6.5
Total	2.4	2.4	7.2	6.5
28-96 Manufacturing				
Importables	-3.3	-2.6	-0.6	-0.4
Exportables	0.6	0.6	7.0	5.7
Total	-1.5	-1.1	2.8	2.4
03-13 Agriculture				
Importables	-0.3	-2.0	2.6	-0.9
Exportables	0.1	0.1	3.3	2.6
Total	-0.0	-0.3	1.7	0.8
19-20 Fishing				
Importables	-4.8	-4.8	-4.6	-5.3
Exportables	0.8	0.8	4.4	3.7
Total	0.2	0.2	3.4	2.7
21-22 Logging and other forestry activities				
Importables	-6.0	-6.0	-6.9	-7.5
Exportables	0.6	0.6	4.1	3.4
Total	0.3	0.3	3.7	3.0
28-45 Food processing				
Importables	-2.4	-2.6	1.2	-0.3
Exportables	0.7	0.7	7.3	6.0
Total	-1.0	-1.1	3.9	2.4
46-50 Beverages and tobacco				
Importables	-1.0	-1.0	3.9	2.7
Exportables	-2.8	-2.8	0.4	-0.9
Total	-1.5	-1.5	1.5	0.6

Table 21 *continued*

	A	B	C	D
51-55 Textile and footwear				
Importables	-17.6	-17.6	-28.3	-29.4
Exportables	0.0	0.0	5.9	4.6
Total	-2.0	-2.0	2.0	0.7
56-58 Wood and wood products				
Importables	0.0	0.0	0.0	0.0
Exportables	3.0	3.0	11.6	10.3
Total	3.0	3.0	11.6	10.3
59-66 Paper, rubber, leather and plastic products				
Importables	-40.6	-40.6	-75.4	-75.5
Exportables	-1.7	-1.7	2.7	1.4
Total	3.8	3.8	13.7	12.2
67-75 Chemicals and chemical products				
Importables	-7.6	-6.3	-9.0	-7.6
Exportables	0.0	0.0	0.0	0.0
Total	-7.6	-6.3	-9.0	-7.6
76-79 Nonmetallic mineral products				
Importables	-0.1	3.7	5.7	11.8
Exportables	11.0	11.0	27.3	25.8
Total	0.4	4.1	6.7	12.5
80-82 Basic metals and metal products				
Importables	-9.0	-9.0	-11.7	-12.8
Exportables	6.5	6.5	18.9	17.4
Total	-8.5	-8.5	-10.7	-11.9
83-91 Machinery, including electrical and transport equipment				
Importables	-9.6	-10.8	-12.8	-16.4
Exportables	0.0	0.0	5.8	4.6
Total	-6.5	-7.4	-6.9	-9.7
92-96 Miscellaneous manufactures				
Importables	7.5	7.5	20.5	19.2
Exportables	1.1	1.1	7.9	6.6
Total	-2.3	-2.3	1.3	0.0 ¹

*Assumptions for cases A, B, C and D are similar to those in Table 19.

¹The rate is 0.03 percent.

There was an overall improvement in cases C and D: output posted positive growth rates of 0.5 percent and 0.4 percent, respectively, and there was also a substantial recovery of the exportable sectors whose output increased by 5.6 percent and 4.6 percent, respectively. The improved performance of the exportable sector is due to the increase in its protection relative to importable sectors; cases C and D used relative EPRs instead of sectoral EPRs. If this is perceived by producers, a positive resource allocation towards the exportable sectors and a positive output response can be generated. This, however, will not improve the trade balance: the trade deficit by 1995 will stand at \$3.03 billion and \$3.0 billion for cases C and D, respectively. This is due to the fact that final demand in both cases C and D will grow by more than twice their respective rates in income: 3 percent and 2.7 percent relative to 1.3 percent and 1 percent.

The remaining sectors that could post the greatest percentage decreases in output in cases C and D are similar to those in cases A and B: sectors 59-66, 67-75, 80-82 and 83-91. Output in agriculture registered a positive growth rate in the latter two cases relative to the previous two cases primarily because of the substantial improvement in its exportable sector. Only the output in the sector (51-55) in manufacturing posted positive growth rates of about 1.5 percent and 0.6 percent in cases C and D, respectively.

Table 22 shows that trade liberalization with real exchange rate adjustment³⁷ brings about positive effects. In cases E and F, the exchange rate needs to depreciate by about 8.2 percent and 7.1 percent in real terms over a span of five years, respectively, to generate an increase in output of 1.9 percent and 1.7 percent, respectively. The increase in output correspondingly brings about positive changes in the wage bill, income, intermediate demand, final demand, imports

37. The required real exchange rate adjustment is that which makes the change in the trade balance equal to zero or that which puts the economy in its 1983 trade balance. The paper is not in a position to say how the real exchange rate can depreciate: theoretically, this could be achieved by a nominal depreciation given that domestic prices remain constant; further, a nominal depreciation could occur given that domestic prices increase but is accompanied by either contractionary fiscal and/or monetary policy.

Table 22
Effects of Trade Reform Assuming Flexible Real Exchange Rate
(For all sectors, in percent)

	E	F	G	H
r_t/r_0^1	8.2	7.1	4.8	4.5
1 Output				
Importables	1.7	1.7	4.0	4.0
Exportables	6.1	5.3	11.5	10.1
Total	1.9	1.7	3.8	3.5
2 Wage bill				
Importables	0.3	-0.5	1.0	-0.5
Exportables	5.6	4.9	10.2	9.0
Total	1.3	1.0	2.5	2.0
3 Income				
Importables	3.1	2.5	6.3	5.2
Exportables	5.6	4.9	10.3	9.0
Total	1.9	1.6	3.5	3.0
4 Intermediate demand				
Importables	2.5	2.6	5.1	5.2
Exportables	1.4	1.0	3.1	2.2
Total	1.4	1.4	3.0	2.8
5 Final demand				
Importables	4.8	4.3	9.5	8.4
Exportables	1.4	1.2	2.7	2.3
Total	2.1	1.9	4.1	3.6
6 Total demand				
Importables	3.6	3.4	7.3	6.8
Exportables	1.4	1.1	2.9	2.2
Total	1.8	1.6	3.6	3.2
7 Imports				
Importables	10.8	9.7	20.0	18.0
8 Exports				
Exportables	17.4	15.7	32.4	29.2
9 Trade deficit (\$B)				
Total	0.0	0.0	0.0	0.0

¹ Percent change in the real exchange rate.

The assumptions used in cases E, F, G and H are similar to those in A, B, C and D, respectively, except that the real exchange rate is flexible.

and exports with a zero trade deficit. The increase in final demand is due mainly to a positive income effect brought about by increases in output; the direct price effect on final demand may not be very strong, as it is neutralized or compensated for by a real depreciation. In cases E and F, there is no increase in the trade deficit even with an increase in income and final demand. Actually, the growth in final demand is still greater than in income, 2.1 percent and 1.9 percent relative to 1.9 percent and 1.6 percent. But the growth rates are very much closer than in cases A, B, C, D. The required change in the exchange rate in case E is greater than in case F because the trade deficit it needs to balance is greater, \$2.98 billion relative to \$2.92 billion.

Production in agriculture (sectors 3-13) expanded by 1.9 percent and 1.4 percent in cases E and F, respectively while its income grew by even higher rates, 2.2 percent and 1.6 percent, respectively (Tables 23 and 24). Overall, manufacturing also posted positive growth rates of 3.3 percent and 3.1 percent in cases E and F, while its income grew by 5 percent and 4.4 percent, respectively. Real exchange rate adjustment was instrumental in bringing about positive output growth in the food processing sector (28-45) and beverages and tobacco (46-50): output in these two major groups posted positive growth rates in all cases, i.e., E, F, G, H. The same sectors in manufacturing (51-55, 59-66, 67-75, 80-82 and 83-91) failed to post positive growth rates despite an accompanying adjustment in the real exchange rate.

In cases G and H, the required adjustment in the real exchange rate to attain a zero trade deficit was less relative to that in cases E and F because supply is more elastic. In cases G and H, the required changes were 4.8 percent and 4.5 percent, respectively. Nevertheless, these changes, together with the lowering of tariffs and the lifting of QRs, produced a greater positive output increase: in case G output increased by 3.8 percent, or twice that in case E, and in case H, output increased by 3.5 percent, or about 73 percent greater than in Case F. This is due to higher supply elasticities built into the model. The performance of the entire manufacturing sector also improved: output grew by seven percent in case G and by 6.5 percent in case H. This improvement was brought about by the following sectors: food processing (28-45), beverages and tobacco (46-50), wood and wood

Table 23
Effects of Trade Reform on Output Assuming Flexible Real Exchange Rate
(By sector groups, in percent)

		E	F	G	H
03-96	All sectors				
	Importables	1.7	1.7	4.0	4.0
	Exportables	6.1	5.3	11.5	10.1
	Total	1.9	1.7	3.8	3.5
03-22	Agriculture, fishing and forestry				
	Importables	2.9	0.9	5.1	1.9
	Exportables	4.6	4.1	7.9	6.9
	Total	2.7	2.2	4.7	3.8
23-27	Mining				
	Importables	6.2	5.6	10.4	9.4
	Exportables	6.9	6.3	11.6	10.6
	Total	6.8	6.2	11.4	10.3
28-9C	Manufacturing				
	Importables	1.5	1.8	3.8	4.1
	Exportables	7.1	6.2	14.2	12.4
	Total	3.3	3.1	7.0	6.7
03-13	Agriculture				
	Importables	4.0	1.5	6.9	2.8
	Exportables	4.2	3.7	7.3	6.3
	Total	1.9	1.4	3.3	2.4
19-20	Fishing				
	Importables	-0.0	-0.6	0.4	-0.5
	Exportables	5.0	4.4	8.5	7.5
	Total	4.4	3.8	7.5	6.5
21-22	Logging and other forestry activities				
	Importables	-2.4	-2.9	-3.4	-4.2
	Exportables	4.8	4.2	8.1	7.2
	Total	4.5	4.0	7.8	6.8
28-45	Food processing				
	Importables	-0.2	-0.8	0.4	-0.7
	Exportables	6.3	5.4	12.8	11.0
	Total	2.0	1.3	4.7	3.3
46-50	Beverages and tobacco				
	Importables	5.7	4.8	11.6	9.8
	Exportables	2.8	2.0	6.2	4.5
	Total	3.4	2.7	7.1	5.8

Table 23 *continued*

		E	F	G	H
51-55	Textile and footwear				
	Importables	-15.8	-16.5	-29.0	-30.3
	Exportables	6.6	5.7	13.3	11.5
	Total	-0.5	-1.4	-0.1	-1.8
56-58	Wood and wood products				
	Importables	0.0	0.0	0.0	0.0
	Exportables	10.4	9.5	20.6	18.7
	Total	10.4	9.5	20.6	18.7
59-66	Paper, rubber, leather and plastic products				
	Importables	-4.4	-5.2	-7.5	-9.1
	Exportables	5.9	5.1	12.1	10.3
	Total	-3.5	-4.3	-5.8	-7.4
67-75	Chemicals and chemical products				
	Importables	-3.6	1.0	-5.9	2.6
	Exportables	0.0	0.0	0.0	0.0
	Total	-3.6	1.0	-5.9	2.6
76-79	Nonmetallic mineral products				
	Importables	18.3	21.1	35.4	40.4
	Exportables	22.0	20.9	42.3	40.2
	Total	18.4	21.0	35.5	40.4
80-82	Basic metals and metal products				
	Importables	-2.4	-3.2	-3.6	-5.3
	Exportables	13.2	12.3	25.9	23.9
	Total	-2.2	-3.0	-3.2	-4.9
83-91	Machinery, including electrical and transport equipment				
	Importables	-2.7	-4.7	-4.2	-8.0
	Exportables	6.6	5.7	13.3	11.5
	Total	-0.9	-2.7	-0.8	-4.3
92-96	Miscellaneous manufactures				
	Importables	-4.6	-5.4	-7.8	-9.4
	Exportables	7.7	6.8	15.5	13.6
	Total	-0.2	-1.1	0.4	-1.2

Table 24
Effects of Trade Reform on Income Assuming Flexible Real Exchange Rate
(By sector groups, in percent)

		E	F	G	H
03-96	All sectors				
	Importables	3.1	2.5	6.3	5.2
	Exportables	5.6	4.9	10.3	9.0
	Total	1.9	1.6	3.5	3.0
03-22	Agriculture, fishing and forestry				
	Importables	2.7	0.7	4.9	1.6
	Exportables	4.6	4.0	7.9	6.9
	Total	3.0	2.4	5.2	4.1
23-27	Mining				
	Importables	6.6	6.0	11.1	10.1
	Exportables	6.8	6.2	11.4	10.4
	Total	6.8	6.2	11.3	10.3
28-96	Manufacturing				
	Importables	3.0	2.9	6.6	6.3
	Exportables	7.2	6.3	14.6	12.7
	Total	4.9	4.4	10.0	9.1
03-13	Agriculture				
	Importables	3.8	1.4	6.6	2.6
	Exportables	4.2	3.7	7.3	6.3
	Total	2.2	1.6	3.8	2.8
19-20	Fishing				
	Importables	-0.8	-1.3	-0.8	-1.7
	Exportables	4.9	4.4	8.4	7.4
	Total	4.3	3.7	7.4	6.4
21-22	Logging and other forestry activities				
	Importables	-2.4	-2.9	-3.4	-4.2
	Exportables	4.8	4.2	8.1	7.2
	Total	4.5	3.9	7.7	6.7
28-45	Food processing				
	Importables	4.0	3.0	8.5	6.4
	Exportables	7.4	6.5	14.8	13.0
	Total	5.5	4.5	11.2	9.3
46-50	Beverages and tobacco				
	Importables	5.5	4.6	11.3	9.5
	Exportables	3.6	2.7	7.6	5.9
	Total	3.4	2.7	7.1	5.7

Table 24 *continued*

	E	F	G	H
51-55 Textile and footwear				
Importables	-12.3	-13.0	-22.3	-23.8
Exportables	6.6	5.7	13.4	11.5
Total	4.5	3.6	9.3	7.5
56-58 Wood and wood products				
Importables	0.0	0.0	0.0	0.0
Exportables	9.8	8.9	19.4	17.5
Total	9.8	8.9	19.4	17.5
59-66 Paper, rubber, leather and plastic products				
Importables	-39.8	-39.9	-74.4	-74.7
Exportables	4.9	4.0	10.1	8.3
Total	11.1	10.1	22.0	19.9
67-75 Chemicals and chemical products				
Importables	-1.7	-1.1	-2.2	-1.3
Exportables	0.0	0.0	0.0	0.0
Total	-1.7	-1.1	-2.2	-1.3
76-79 Nonmetallic mineral products				
Importables	6.5	9.7	13.2	19.0
Exportables	18.6	17.5	35.9	33.8
Total	7.1	10.1	14.3	19.8
80-82 Basic metals and metal products				
Importables	-3.2	-4.0	-5.1	-6.7
Exportables	14.1	13.0	27.4	25.3
Total	-2.6	-3.4	-4.1	-5.7
83-91 Machinery, including electrical and transport equipment				
Importables	-3.8	-5.9	-6.2	-10.4
Exportables	6.6	5.7	13.3	11.5
Total	-0.5	-2.2	-0.0 ¹	-3.5
92-96 Miscellaneous manufactures				
Importables	14.7	13.8	28.7	26.7
Exportables	7.7	6.8	15.5	13.6
Total	4.1	3.2	8.5	6.7

¹The rate is -0.05 percent.

products (56-58), and nonmetallic mining (76-79). The same sectors (i.e., 51-55, 59-66, 67-75, 80-82 and 83-91) failed to show any improvement in output.

In cases G and H, the income of the entire economy grew by 3.5 percent and 3.0 percent, respectively. The expansion of income in the following sectors was greater than their respective growth rates in output: agriculture (3-13), food processing (28-45), and textile and footwear (51-55). This suggests that, on the average, it was the high value-added sectors in these major groups that expanded.³⁸

The general results from all these scenarios point to one thing: the impact of trade reform is small since the models used cannot capture dynamic effects, which could be larger.

COMPARISON WITH RESULTS FROM THE TC-CGE MODEL

There are two sets of results from the TC-CGE model: the first assumes a flexible exchange rate while the second assumes a fixed exchange rate (Clarete 1992). Overall, the results of this study and of the Chunglee and simulation models do not contradict the results of the TC-CGE results.

The TC-CGE model finds that aggregate domestic production increases if the exchange rate is allowed to rise to accommodate the influx of imports due to the implementation of E.O. 470. The output of the import substitute declines by as much as .071 percent to about .03 percent while exports increase by .47 percent and .23 percent in the first year and the last year of the program, respectively. In the simulation model, case E, total output of both importables and exportables increases by a combined total rate of 1.9 percent. In general, the two models show the agriculture, food processing, and

38. Income did not really grow by 11 percent and 10 percent in cases E and F for sectors 59-66. This is the same problem as discussed in footnote., i.e, negative value-added combined with decreases in output. If the same adjustments are made, i.e., equate all $V_{j^*} < 0$ to zero, income would grow by only 1.5 percent in case E and by 0.62 percent in case F.

beverage and tobacco sectors as gainers and the chemicals, fabricated metals, and transport equipment sectors as losers.³⁹

If a fixed exchange rate is assumed, the TC-CGE and Chunglee models both show that overall output falls: by .027 percent in the CGE model and by 1.1 percent in the Chunglee model (case A). Both models show that the following sectors would contract: agriculture and fishery, food/beverage and tobacco, chemicals, basic metals and fabricated metal products, machinery including electrical equipment and transport equipment, with the gainers being logging, mining, and nonmetallic mineral products.

39. Nonmetallic mineral products (sectors 76-79) cannot be considered a winner because even without an exchange rate adjustment, their output will have already increased, ranging from a low 10.9 percent in case A to a high of 32.3 in case D.

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Conclusion

IN the end, one goes back to the main theme — trade reform, the instruments used and its desired effects. In essence, the main objective of trade reform is to change the incentive structure between traded goods and to bring about an improvement in the trade balance.

Chapter 2 discussed trade reform in the 1990s: E.O. 470 made some gains and contributed to a sense of trade policy continuity and commitment of the government; nevertheless, these gains were easily eroded by subsequent policy moves such as E.O. 8 and M.O. 95. The government's commitment to reform failed the test of time. Commitment to and credibility in trade reform is important in inducing the necessary changes in producer behavior. Weak commitment and lack of credibility are damaging because producers will not carry out the necessary adjustments in production after perceiving that policy changes are only temporary. Hence, any changes brought about by tariffs and by the lifting of QRs will not produce the desired resource allocation effects.

The policy reforms that came after E.O. 470 such as E.O. 8 and M.O. 95 actually reversed the gains achieved by E.O. 470. E.O. 470 and the ongoing import liberalization have not been successful on these counts: first, they lowered the level of protection and its dispersal among sectors but did not change the structure of protection since the bias against exports continued on as shown by their EPRs; second, they did not significantly achieve a more neutral or more even form of protection as shown by an inverted normal distribution of EPRs in the economy. Trade policy reform within this context was limited in changing the existing biases of

the trade regime. Nevertheless, trade reform was deemed necessary even though its contribution was perceived as limited.

Chapter 4 pointed out one important tool in trade reform—an adjustment in the real exchange rate. The liberalization of the foreign exchange market discussed in Chapter 2 was not sufficient since monetary authorities could defend a lower exchange rate by inducing capital inflows via a high interest rate policy.

The adjusted real exchange rate was argued to have been the more significant price variable in changing relative incentives among sectors: the negative output effect can be prevented as shown by the results in cases E, F, G and H. Hence, trade policy reform without reform in the exchange rate and inflation policy may not be able to reap the gains at the least, and may, at the worst, erode the gains from implementing trade reform.

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Appendix 1

Computing the 1983 Standard Conversion Factor (SCF)

IO Type	Q_{bj} ($Q/(1+T_j)$)	X_{dj}	M_{dj}	$M_{bj}:(M_j/1+T_i)$ $X_{bj}:(X_j/1+T_j)$	A $M:2Q+M$ $X:2Q-X$	B ($1+T_j$) ($1-T_x$)	1983 T_j	1983 T_{ii}	A*B	Q_{dj}
10 MM	0		606,600	429,573	429,573	1.46	0.46	0.41	628,250	0
11 MM	53,841		352,400	338,748	446,430	1.64	0.64	0.04	730,494	88,100
19 MM	1,007,180		5,800	5,372	2,019,732	1.69	0.69	0.08	3,403,053	1,697,300
20 MM	1,547,757		8,300	7,962	3,103,476	1.69	0.69	0.04	5,237,117	2,611,840
37 MM	3,091,091		1,025,600	919,326	7,101,507	1.50	0.50	0.12	10,672,855	4,645,600
38 MM	216,069		128,500	110,405	542,542	2.45	1.45	0.16	1,330,312	529,800
39 MM	952,565		84,900	71,748	1,976,878	1.66	0.66	0.18	3,275,687	1,578,400
40 MM	3,597,908		65,000	55,613	7,251,428	1.80	0.80	0.17	13,001,541	6,465,800
41 MM	1,217,248		70,600	42,243	2,476,738	1.91	0.91	0.67	4,724,378	2,321,900
42 MM	1,072,537		1,200	717	2,145,791	2.24	1.24	0.67	4,813,009	2,405,700
45 MM	1,722,213		135,400	109,414	3,553,840	1.77	0.77	0.24	6,276,436	3,041,600
47 MM	120,089		1,600	1,336	241,513	1.71	0.71	0.20	413,809	205,760
52 MM	864,601		1,616,100	1,026,095	2,755,297	1.70	0.70	0.58	4,686,485	1,470,600
53 MM	302,088		420,900	314,198	918,375	2.16	1.16	0.34	1,979,097	651,000
62 MM	83,468		509,500	411,717	578,653	2.97	1.97	0.24	1,718,600	247,900
66 MM	2,792,813		115,000	92,929	5,678,555	1.67	0.67	0.24	9,496,815	4,670,700
77 MM	1,807,944		16,500	10,538	3,626,426	1.85	0.85	0.57	6,710,701	3,345,600
79 MM	281,308		237,600	192,000	754,616	4.74	3.74	0.24	3,576,880	1,333,400

Appendix 1 *continued*

IO Type	Q _{bj} (Q/(1+T _j))	X _{dj}	M _{dj}	M _{bj} :(M _j /1+T _i) X _{bj} :(X _j /1+T _j)	A	B	1983 T _j	1983 T _{ii}	A*B	Q _{dj}
					M:2Q+M X:2Q-X	(1+T _j) (1-T _x)				
81 MM	120,868		174,300	147,549	389,286	1.30	0.30	0.18	507,590	157,600
10 MX	304,059	307,100		304,059	304,059	1.01	0.01	0.41	307,100	307,100
11 MX	1,278,557	244,000		251,546	2,305,567	0.97	-0.03	0.04	2,236,400	1,240,200
19 MX	6,857,778	43,900		44,343	13,671,212	0.99	-0.01	0.08	13,534,500	6,789,200
20 MX	10,997,221	178,100		187,474	21,806,968	0.95	-0.05	0.04	20,716,620	10,447,360
37 MX	2,158,835	741,200		713,512	3,598,058	1.03	0.03	0.12	3,706,000	2,223,600
38 MX	2,557,358	903,600		852,453	4,262,264	1.06	0.06	0.16	4,518,000	2,710,800
39 MX	4,509,714	1,237,300		1,178,381	7,841,048	1.05	0.05	0.18	8,233,100	4,735,200
40 MX	335,429	117,400		111,810	559,048	1.05	0.05	0.17	587,000	352,200
41 MX	716,455	262,700		238,818	1,194,091	1.10	0.10	0.67	1,313,500	788,100
42 MX	50,182	18,400		16,727	83,636	1.10	0.10	0.67	92,000	55,200
45 MX	389,182	142,700		129,727	648,636	1.10	0.10	0.24	713,500	428,100
47 MX	1,598,619	21,800		18,819	3,178,419	1.16	0.16	0.20	3,681,880	1,851,840
52 MX	1,496,182	1,645,800		1,496,182	1,496,182	1.10	0.10	0.58	1,645,800	1,645,800
53 MX	1,129,909	414,300		376,636	1,883,182	1.10	0.10	0.34	2,071,500	1,242,900
62 MX	301,600	301,600		301,600	301,600	1.00	0.00	0.24	301,600	301,600
66 MX	422,182	154,800		140,727	703,636	1.10	0.10	0.24	774,000	464,400
77 MX	159,143	55,700		53,048	265,238	1.05	0.05	0.57	278,500	167,100
79 MX	324,273	118,900		108,091	540,455	1.10	0.10	0.24	594,500	356,700
81 MX	143,273	157,600		143,273	143,273	1.10	0.10	0.18	157,600	157,600

Appendix 1 continued

IO Type	Qbj (Q/(1+Tj))	Xdj	Mdj	Mbj:(Mj/1+Ti) Xbj:(Xj/1+Tj)	A M:2Q+M X: Q-X	B (1+Tj) (1-Tx)	1983 Tj	1983 Tii	A*B	Qdj
03 PM	3,397,619	600	881,500	522,370	7,317,608	1.49	0.49	0.69	10,939,091	5,079,100
08 PM	4,227,634	13,300	127,200	107,678	8,562,945	1.68	0.68	0.18	14,347,214	7,083,400
13 PM	1,078,491	54,500	1,664,500	1,345,051	3,502,033	1.55	0.55	0.24	5,412,041	1,666,700
22 PM	354,937	7,200	120,700	97,535	807,408	1.58	0.58	0.24	1,278,208	561,900
26 PM	1,246,441	19,400	121,500	98,182	2,591,063	1.34	0.34	0.24	3,475,911	1,672,100
27 PM	589,638	34,300	20,129,900	14,352,870	15,532,147	1.41	0.41	0.40	21,945,370	833,100
28 PM	25,763,529	0	0	0	51,527,059	1.02	0.02	0.02	52,557,600	26,278,800
30 PM	2,327,048	26,600	1,226,100	1,037,924	5,692,020	1.29	0.29	0.18	7,365,474	3,011,200
31 PM	941,659	2,500	317,100	256,242	2,139,561	1.50	0.50	0.24	3,205,277	1,410,700
33 PM	3,374,014	16,300	187,700	111,230	6,859,257	2.16	1.16	0.69	14,781,700	7,271,000
34 PM	10,604,366	4,600	162,500	137,560	21,346,293	1.68	0.68	0.18	35,885,253	17,827,000
35 PM	1,048,371	900	1,100	652	2,097,394	1.91	0.91	0.69	4,010,847	2,004,800
36 PM	3,453,386	8,200	385,000	301,961	7,208,734	2.01	1.01	0.28	14,475,137	6,934,400
46 PM	879,744	50,900	167,100	91,381	1,850,870	1.83	0.83	0.83	3,384,500	1,608,700
49 PM	3,369,302	10,800	56,300	30,995	6,769,599	1.82	0.82	0.82	12,296,300	6,120,000
51 PM	5,347,483	161,200	2,061,600	1,427,899	12,122,864	1.77	0.77	0.44	21,504,749	9,485,900
59 PM	868,761	99,000	1,134,900	917,091	2,654,613	1.67	0.67	0.24	4,435,859	1,451,700
60 PM	744,768	22,900	169,500	136,970	1,626,506	2.85	1.85	0.24	4,632,290	2,121,100
61 PM	1,380,152	33,200	242,300	195,798	2,956,102	1.63	0.63	0.24	4,819,629	2,250,200
63 PM	1,147,158	5,400	163,300	111,658	2,405,973	2.02	1.02	0.46	4,867,284	2,320,700

Appendix 1 continued

IO Type	Q _{bj} (Q/(1+T _j))	X _{dj}	M _{dj}	M _{bj} :(M _j /1+T _i) X _{bj} :(X _j /1+T _j)	A M:2Q+M X:2Q-X	B (1+T _j) (1-T _x)	1983 T _j	1983 T _{ii}	A*B	Q _{dj}
64 PM	340,444	13,100	21,900	12,978	693,867	1.69	0.69	0.69	1,170,900	574,500
65 PM	278,544	15,800	289,600	234,020	791,109	1.52	0.52	0.24	1,204,226	424,000
67 PM	3,418,582	65,600	836,000	675,556	7,512,719	1.33	0.33	0.24	10,002,435	4,551,500
68 PM	1,043,585	383,900	3,742,200	3,024,000	5,111,170	2.65	1.65	0.24	13,544,600	2,765,500
69 PM	1,298,264	200	1,155,500	933,737	3,530,266	1.30	0.30	0.24	4,597,113	1,690,600
70 PM	870,657	94,400	2,669,900	2,157,495	3,898,808	1.41	0.41	0.24	5,498,099	1,227,800
71 PM	522,818	14,200	146,700	108,667	1,154,303	1.62	0.62	0.35	1,874,242	848,900
72 PM	1,265,407	4,700	235,600	190,384	2,721,199	1.53	0.53	0.24	4,163,706	1,936,200
73 PM	1,607,581	6,500	89,600	61,265	3,276,428	1.68	0.68	0.46	5,497,190	2,697,200
74 PM	151,074	46,900	221,200	90,749	392,897	3.91	2.91	1.44	1,536,227	590,700
75 PM	162,547	107,200	1,192,600	963,717	1,288,812	7.66	6.66	0.24	9,865,855	1,244,300
76 PM	21,461,751	1,607,400	4,213,800	3,584,687	46,508,189	1.81	0.81	0.18	84,263,537	38,884,400
78 PM	1,167,020	37,000	175,300	141,657	2,475,697	1.84	0.84	0.24	4,549,094	2,144,400
80 PM	7,643,026	294,900	4,365,500	3,880,444	19,166,497	1.35	0.35	0.13	25,890,104	10,324,200
82 PM	2,613,804	94,500	2,134,300	1,724,687	6,952,296	2.76	1.76	0.24	19,188,336	7,214,100
83 PM	6,938,765	291,800	9,647,900	7,796,283	21,673,813	1.34	0.34	0.24	29,023,402	9,291,700
84 PM	498,049	0	5,255,100	4,246,545	5,242,643	1.28	0.28	0.24	6,716,874	638,100
85 PM	996,189	163,900	482,600	334,257	2,326,634	2.65	1.65	0.44	6,165,581	2,639,900
86 PM	1,193,587	23,000	43,300	34,990	2,422,164	1.67	0.67	0.24	4,056,398	1,998,900
87 PM	712,751	100,500	598,700	483,798	1,909,300	1.37	0.37	0.24	2,612,878	975,400

Appendix 1 continued

IO Type	Qbj	Xdj (Q/(1+Tj))	Mdj	Mb _j :(M _j /1+T _i) Xb _j :(X _j /1+T _j)	A	B	1983 T _j	1983 T _{ii}	A*B	Qdj
					M:2Q+M X:2Q-X	(1+T _j) (1-T _x)				
89 PM	1,429,282	42,000	1,965,300	1,588,121	4,446,686	1.41	0.41	0.24	6,256,487	2,011,000
90 PM	875,493	2,200	858,300	438,042	2,189,029	3.04	2.04	0.96	6,654,648	2,661,500
91 PM	1,266,706	252,900	3,263,300	2,637,010	5,170,422	1.36	0.36	0.24	7,033,325	1,723,100
93 PM	51,083	1,600	4,000	2,770	104,937	3.33	2.33	0.44	349,631	170,200
94 PM	164,767	2,200	39,800	27,566	357,099	1.88	0.88	0.44	670,347	309,300
95 PM	263,968	1,100	62,200	46,074	574,010	1.63	0.63	0.35	935,924	430,400
96 PM	1,662,575	1,512,600	2,396,500	1,936,566	5,261,716	1.83	0.83	0.24	9,602,632	3,034,200
04 PX	7,206,264	41,800	0	45,934	14,366,593	0.91	-0.09	-0.09	13,073,600	6,557,700
06 PX	3,382,323	990,500	0	1,000,505	5,764,141	0.99	-0.01	-0.01	5,706,500	3,348,500
07 PX	6,098,614	211,700	22,500	209,604	11,987,624	1.01	0.01	0.01	12,107,500	6,159,600
12 PX	2,557,980	426,700	152,900	431,010	4,684,949	0.99	-0.01	-0.01	4,638,100	2,532,400
21 PX	10,682,346	678,700	400	837,901	20,526,790	0.81	-0.19	-0.19	16,626,700	8,652,700
23 PX	4,278,400	3,466,300	2,100	3,466,300	5,090,500	1.00	0.00	0.00	5,090,500	4,278,400
24 PX	2,647,000	2,351,400	0	2,351,400	2,942,600	1.00	0.00	0.00	2,942,600	2,647,000
25 PX	589,100	325,300	30,100	325,300	852,900	1.00	0.00	0.00	852,900	589,100
29 PX	6,222,941	2,894,200	6,100	2,837,451	9,608,431	1.02	0.02	0.02	9,800,600	6,347,400
32 PX	12,679,800	5,401,100	248,400	5,401,100	19,958,500	1.00	0.00	0.00	19,958,500	12,679,800
43 PX	1,723,600	887,300	2,500	887,300	2,559,900	1.00	0.00	0.00	2,559,900	1,723,600
50 PX	1,759,529	1,100	0	1,035	3,518,024	1.06	0.06	0.06	3,737,900	1,869,500
54 PX	9,701,091	3,294,600	188,800	2,995,091	16,407,091	1.10	0.10	0.00	18,047,800	10,671,200

Appendix 1 continued

IO Type	Q _{bj} (Q/(1+T _j))	X _{dj}	M _{dj}	M _{bj} :(M _j /1+T _i) X _{bj} :(X _j /1+T _j)	A	B	1983 T _j	1983 T _{ii}	A*B	Q _{dj}	
					M:2Q+M X:2Q-X	(1+T _j) (1-T _x)					
55 PX	1,644,909	1,321,600	102,800	1,201,455	2,088,364	1.10	0.10	0.00	2,297,200	1,809,400	
56 PX	5,957,170	1,356,300	7,800	1,279,528	10,634,811	1.06	0.06	0.06	11,272,900	6,314,600	
57 PX	3,997,830	1,447,100	0	1,365,189	6,630,472	1.06	0.06	0.06	7,028,300	4,237,700	
58 PX	1,287,818	285,200	16,000	259,273	2,316,364	1.10	0.10	0.10	2,548,000	1,416,600	
88 PX	3,332,364	2,588,200	1,568,200	2,352,909	4,311,818	1.10	0.10	0.00	4,743,000	3,665,600	
92 PX	1,170,300	700,200	10,900	700,200	1,640,400	1.00	0.00	0.00	1,640,400	1,170,300	
					579,390,261				811,893,234		
1+SCF= (1+T)*(2Q+M)/(2Q-X)					1.40						

- Q_{bj} = Value of output in 1983 I-O Table at border prices deflated by T_js using price comparisons.
- X_{dj} = Value of exports in domestic prices
- M_{dj} = Value of imports in domestic prices
- X_{bj} = Value of exports in border price; deflated by 1+T_j
- M_{bj} = Value of imports in border price; deflated by 1+T_i
- T_j = 1983 implicit tariff on output using price comparisons
- T_{ii} = 1983 implicit tariff on input