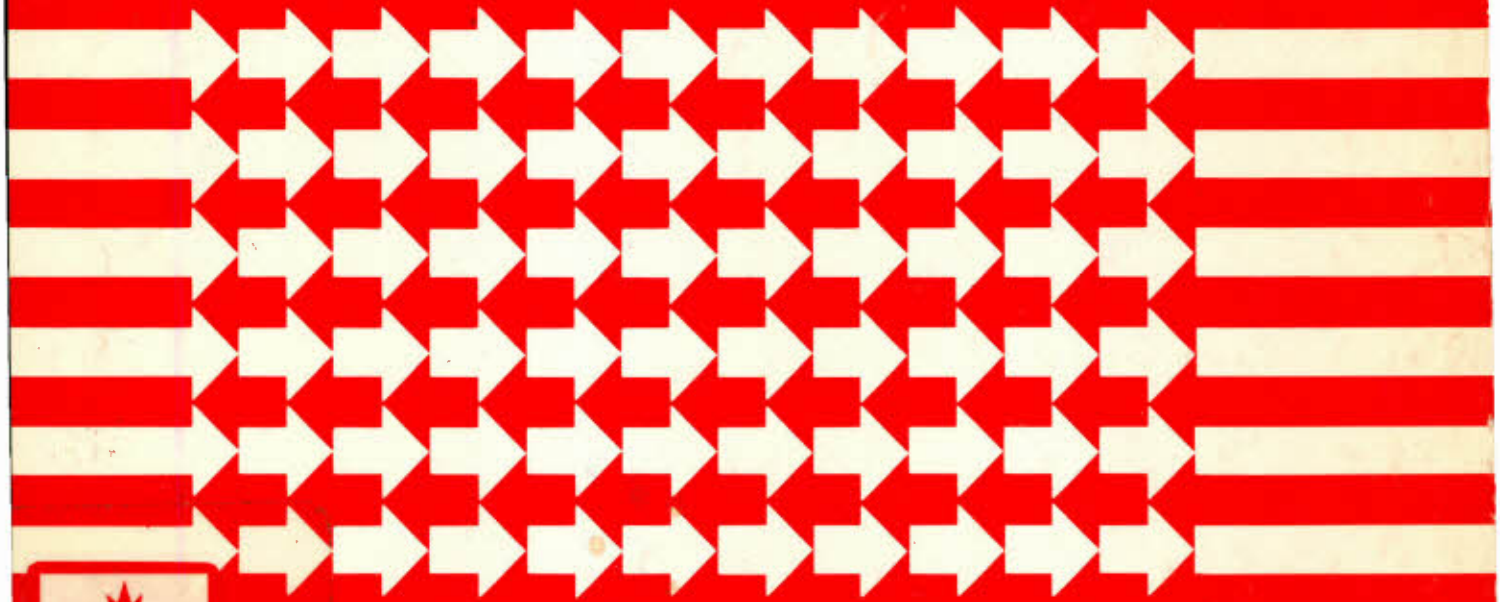
Canada's Trade Relations with Developing Countries

The Evolution of Export and Import Structures and Barriers to Trade in Canada

Vittorio Corbo
Oli Havrylyshyn



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Foreword

The Institute of Applied Economic Research (IAER), successor institution of the International Institute of Quantitative Economics founded in 1969, has been active in its present form since April 1976. The IAER has firmly established itself as Concordia University's Institute for programs of socio-economic research and training related to both the developing world and Canada.

The IAER envisages the most fundamental problems of economic and social development in the developing world to be: efficient use of scarce economic resources; creation of employment opportunities; overpopulation; food availability and the development of the rural sector; equitable distribution of income; development of an indigenous research capability and planning of educational systems; and, the social implications of alternative development strategies. These problems require new kinds of international collaboration between the developed and developing countries.

For the industrialized countries, such as Canada, the IAER sees some of the major problems of economic and social development to be: management of natural resources, especially energy; perservation of the environment; improvement and management of urban public services; regional economic disparities; inflation and unemployment; and the development of socially acceptable income policies. These problems require improved forms of collaboration at the national level among universities, the public, government institutions and the private sector.

The IAER, through international and Canadian collaboration, attempts to make a contribution to the solution of some of these problems. In order to begin effectively the task of conceptualizing, defining and analysing these fundamental problems, the IAER utilizes the most modern methods of scientific analysis available, as well as the services of recognized experts in the relevant fields, who participate as Senior Research Advisors and Research Associates.

The IAER's contribution to the solution of some of these major problems, referred to in the preceding statement, takes the form of:

(1) initiating, organizing and implementing major economic research projects, at both international and Canadian levels, occasionally in collaboration with other research institutes and interested specialists;

(2) organizing seminars and conferences on specific economic issues of particular international and Canadian interest; and

(3) serving as a link between Concordia University and the Canadian private sector with the objective of increasing the latter's awareness of participation in, and support for applied economic research.

The IAER, given its expertise and experience, believes that it has a useful and necessary role to play both in the developing world and in Canada.

Professor Vittorio Corbo
Director, IAER

Preface

The purpose of this study is to present an analysis of Canada's trade with the developing world that can contribute to the formulation of Canadian policies on this issue.

This new interest of less developed countries (LDCs) in increasing trade among themselves and with the developed world is putting and will put heavy pressure on developed countries — and Canada in particular — to decrease or at least to keep their barriers to trade with LDCs. Furthermore, one would also expect that most of the increase in trade will come from trade in manufactures.

This study is organized in four parts and several appendixes. Part I provides a background to the study and contains two chapters; Chapter 1 reviews the trends in trade policies of developing countries and Chapter 2 discusses the direction and commodity composition of Canada's trade. This is a descriptive chapter in which (as in the entire study), special emphasis is put on Canada's trade with different areas in the developing world.

In the second part of the study, we analyse Canada's barriers to trade with developing countries. In Chapter 3, we review the different measures of bias in tariff barriers and, in Chapter 4, we present the empirical evidence on tariff bias, in also comparing Canada's bias with that of the European Economic Community (EEC).

In Part III of the study, we analyse Canada's trade flows with the developing world by using a market-share model to decompose changes in trade flows. This part of the study consists of Chapter 5, in which we analyse Canada's export flows, and Chapter 6, in which we analyse Canada's import flows. In Part IV, we analyse how the trade flows of Part II and III have been and could be affected by existing and alternative tariff regimes and preferential systems. This part of the study consists of three chapters. In Chapter 7, we analyse how existing and potential tariff schemes have affected and could affect imports into Canada from the developing world. In Chapter 8, we discuss the whole issue of preferential tariffs for LDCs. Finally, in Chapter 9, we present a summary and our main conclusions.

In carrying out this study, we have become indebted to many people. First, the Economic Council of Canada for providing financial support for undertaking the study. André Barsony and Roy Mathews of the Economic Council of Canada are to be thanked for reading the manuscript and providing many valuable suggestions. We are grateful to Dick Brown and several of his colleagues at the Department of Industry, Trade and Commerce for their assistance with basic data inputs. We are also thankful to J. Ahmad, H. Lary, G. Reuber and D. Wakid as well as three anonymous referees for detailed comments and suggestions on a previous draft of this manuscript. Many thanks are due to Lucie Brault for her highly competent and most dedicated research assistance. Also we thank Veronica Corbo, Denis Groulx, Joe Italiano, Panagiotis Lazaridis,

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Seminars at University of Manitoba, Université de Montréal, Université de Québec à Montréal, Miami University of Ohio, and University of South Carolina provided many valuable insights.

The Institute of Applied Economic Research (IAER) of Concordia University besides administering the research grant provided us with the facilities and an atmosphere essential for carrying out this research. The views expressed herein are the authors' responsibility and do not necessarily reflect those of the IAER and/or Concordia University.

Typing assistance was provided by Esther Massa and Melanie Neufield.

Part I
Background to the Study

1 Trends in Trade Policies of Developing Countries: An Overview

Two main events have shaped the foreign trade policies of developing countries (LDCs) from the 1930s onwards: the Great Depression and the Second World War. A strong drive by the LDCs for reduced dependence on the world economy was stimulated by the Great Depression, which caused a substantial fall in export earnings and, through worldwide deflation, an increase in their real foreign debt. As a result of the Second World War, the LDCs experienced another major disruption; although the markets for their exports were buoyed up, the desired imports were unavailable due to the shift in the production structure of the more developed countries (MDCs) towards war materials. Hence, once again the dependence on trade had undesirable effects on the functioning of their economies. Developments following the war reinforced the lessons learned from the Great Depression and gave further impetus to the desire to decrease reliance on international trade. These experiences played an important role in the widespread adoption by developing countries of import-substitution policies, which have since affected their economic structure. As a consequence, the orientation of LDCs shifted away from international trade to economic expansion based more on production for the domestic market.

Evidence has been accumulating in recent years that, as a result of the policies used to pursue the import substitution strategy (overvalued currencies, discriminatory tariffs, quotas, and so forth), a very particular structure of effective protection rates has been created. This structure, besides discriminating against exports (largely agricultural and mining products), is characterized by a degree of dispersion in the rates of protection, which could not in most cases be justified by any of the traditional arguments for protection such as creation of externalities, infant industry, and so on. As documented in studies[1] by the Organisation for Economic Co-operation and Development (OECD), by Balassa and Associates, and by the National Bureau of Economic Research (NBER), the import substitution policies not only failed to halt the steady growth of imports but also led to stagnation of exports and a series of other undesirable effects. First, was the development of inefficient and evergrowing bureaucracies to enforce the often contradictory trade regimes regulations. Second, the economies became even more dependent on imports for the import substitution policies, while reducing consumer goods dependence, increased considerably dependence in raw materials and capital goods. The creation of a domestic industry geared to production of previously imported goods decreased imports of such goods, but requirements of raw materials and capital goods for these new industries increased imports of this type. The crucial difference was that these latter imports could not be cut as easily as had been the case under consumer goods dependence, for such a cut would lead to unemployment and underutilization of capacity with a consequent deflationary impact on the level of economic activity. Third, resource misallocation ensued, as evidenced by empirical studies of domestic resource cost, which are available for many developing countries.[2] These studies generally agree that an important cause of resource misallocation has been protectionism, which closed the door to external sources of competition. Fourth, lack of competition became a problem in the industrial sector because the small size of the market prevented the emergence of more than a very few firms. Finally, distortion in factor prices tended to occur through various forms of capital goods subsidization such as a multiple exchange rate system, preferential interest rates, import priveleges, and so on. Similarly, liberal labour policies often led to high wage costs.

During the 1960s, in what Hirshman (1968) has called a "case of historical acceleration," the import substitution strategy became subject to increasing criticism in the development literature. During this period too, the favourable export performance of a few developing countries following more open trade regimes (South Korea, Taiwan, and the Philippines) demonstrated the potential benefits of export promotion policies. As a consequence of these two perceptions, there has been a reorientation towards export expansion strategies during the 1970s, manifested not only by the policies of particular countries,

but also by the strong emphasis given to the problem of manufactured exports from LDCs in the New International Economic Order (NIEO).

The advantages of export promotion policies, especially for small developing countries, arise primarily from the static and dynamic resource allocation gains derived from the exploitation of comparative advantages. These gains come from economies of scale derived from specialization; increase in overall efficiency from the learning process involved in international trade, such as quality control, and development of new organizational and production techniques; and development of international competition in the small home market.[3] Further, the employment implications of export expansion seem to be more promising than is the case with import substitution. Evidence from the NBER project on "Employment Implications of Trade Strategies"[4] shows that, especially for trade with developed countries, export expansion creates substantially more employment than import substitution.

A major disadvantage of such policies is the protectionist reaction that might be engendered in the developed world. With a wide front of third world countries promoting their manufactured exports, threatened labour intensive industries in MDCs have already begun to clamor for protection. Such a reaction by MDCs (which we see below seems to be taking place in Canada) could drastically limit the success of this policy, since the developed world is, and must continue to be, the largest market for the manufactures of LDCs.[5]

Given the mounting evidence on benefits export promotion policies, plus the danger of these policies being undermined by MDC trade restrictions, it is not surprising that the developing countries have been pressing for easier entry into these markets. The issue of such access is presently one of the main problems in the discussion on North-South relations in international fora.[6] Although this discussion is manifested in many institutional forms, perhaps the best known is the proposal for a New International Economic Order (NIEO). The proposals for a NIEO cover a number of different areas, in particular, trade, investment, aid, and transfer of technology.[7] In the present study, our concern is entirely with the trade issue. On this issue, the NIEO proposes a restructuring of trade barriers in developed countries so as to favour the manufactured exports of LDCs or at the very least to avoid discrimination against them, whether this is in the form of bias in the tariff structure, or in the form of non-tariff barriers.

It had been noted as early as the mid-1960s (Balassa (1965), Johnson (1967)) that the developed countries' tariff structure discriminated against imports from the developing countries in two ways: first, tariffs escalate with the stages of processing (the rates being higher on manufactured goods than raw materials) so that the ratio of raw materials to manufactures in MDCs imports from developing countries is higher than comparative advantage might dictate; and, second, the bias is particularly strong in manufactured goods of particular interest to developing countries (goods intensive in unskilled labour) which face higher tariffs than other manufactures.[8]

Discrimination in non-tariff barriers, it is alleged, is largely directed against developing countries, often quite explicitly. For manufactured goods, such barriers (quotas, voluntary export restraints, and so forth) are applied on goods that are widely conceded to be those of "special interest" to developing countries, most particularly, textiles and clothing and, more recently, electrical and electronic goods. Indeed, the system has become internationally entrenched in such institutions as the new Multi-Fiber Arrangement regulating international trade in textiles (replacing and enlarging the former arrangements on cotton and GATT's Textiles Surveillance Board). Furthermore, most bilateral restriction agreements limit imports specifically from developing countries. Finally, in the case of non-manufactured goods, especially food items (both processed and unprocessed), bias is sometimes said to occur in the application of health standards, in that approval is often harder to obtain for products from developing countries. Thus, from the review of trends in LDCs trade policies and proposals, the following picture emerges. First, LDCs generally express strong desire to partake once again in more open international trade and to increase the volume of their trade substantially. Second, it is clear that they wish to expand the importance of their trade with MDCs. Third, in this orientation, there is a strong emphasis put on the rapid expansion of manufactured exports from LDCs to MDCs, which may require considerable easing of import restrictions in the developed world. Finally, although it is not discussed in the literature on the NIEO that we have reviewed, it should be implicitly clear that greater trade means not only more exports from LDCs to MDCs, but also increased opportunities for the reverse flow.

In the above context, an analysis of Canada's trade relations with LDCs must address itself to the following issues: on the aspects of imports into Canada from LDCs, one should study the importance of LDC trade; its geographic composition; and comparison of the import basket from LDCs

with the one from MDCs, particularly for manufactured goods. Further, it will be important to analyse the changes in this trade and its geographic and commodity composition. Finally in as much as tariff and non-tariff barriers will affect the LDCs performance in increasing exports, especially manufactures, to MDCs, it will be imperative to investigate the extent of such barriers and test for the possible existence of a bias against LDCs.

On the export side, with the LDCs moving into a phase of greater trading, there will undoubtedly be increased opportunities for selling in these markets. Therefore, the nature of past Canadian exports to LDCs is of considerable interest. Parallel to our concerns mentioned above for imports, we wish to examine for exports as well the importance of LDC markets, the geographical composition, and the comparison of Canadian commodity exports to LDCs with those from MDCs. As for imports, we wish to analyse how these export factors have changed over time and how well Canadian exports to LDCs have fared in face of competition with exports to LDCs from other MDCs.

2 Direction and Composition of Canada's Trade Flows

In this chapter, we examine in detail the structure of Canada's trade, with special consideration to its trade with developing countries. Most of our analysis will be done by comparing trade during the second half of the 1960s with that of the first part of the 1970s, using annual averages for the periods.[1] Furthermore, the flows are analysed by commodity groups and by regions of the world.

In our analysis, eight commodity groups are used: (1) Food, Live Animals, Beverages and Tobacco (SITC 0+1); (2) Industrial Materials (SITC 2+4); (3) Fuels and Related Goods (SITC 3); (4) Chemicals (SITC 5); (5) Manufactured Materials (SITC 6)[2]; (6) Machinery and Transport Equipment (SITC 7); (7) Miscellaneous Manufactured Articles (SITC 8); and (8) Other Commodities (SITC 9). The Machinery and Transort Equipment Group is further subdivided into Durable Consumer Goods (SITC 732+733) and Capital Goods (SITC 7 minus 732 and 733).

Countries have been classified into three major sub-divisions, Developing Countries (LDC), Developed Countries (MDC), and Socialist Countries. Furthermore, the LDCs have been divided into four areas: Asia, Africa, Middle East, and Latin America including Caribbean. These four areas have been then further subdivided into regions as follows: Asia: (1) East Asia and (2) Rest of Asia; Africa: (3) South Africa, (4) West Africa, (5) East Africa and Southern Africa; (6) Maghreb and (7) Other Francophone Countries; Middle East: (8) Oil Exporters and (9) Other Middle East Countries; Latin America: (10) Caribbean, (11) Central America, and (12) Latin America Free Trade Association Countries. The classification of individual LDCs into these twelve regions appear in Appendix A. MDCs and Socialist Countries are treated as one group. In the rest of this chapter, DSC refers to Developed Countries plus Socialist Countries.

In this chapter, we work with the four areas only; subsequent analysis will also deal with the twelve-region classification of LDCs.

CANADIAN MERCHANDISE EXPORTS

Canadian exports to developing countries as a share of total exports were 7.52 per cent in the period 1966-70 and 7.97 per cent in the period 1971-75 (Tables 2-1 and 2-2). To obtain some idea of the relative position of Canada vis-à-vis the whole developed world, we compare the above figures with developed world exports in the period 1971-75. Some 21.34 per cent of the total exports from the developed world went to LDCs; of this amount, the United States exported 31.22 per cent, Japan 44.30 per cent, and the nine members of the European Economic Community 16.56 per cent of total exports to the developing world (Table 2-3).

Canada's small contribution of exports to the developing countries might be anticipated in as much as both are major exporters of natural resource based commodities (Groups 1 to 3). If this explanation were correct, the smaller weight in Canada's export basket should be particularly accentuated for primary commodities whereas, for others, it should probably be higher in at least certain cases. Disaggregated data suggest almost the opposite tendency, as shown in Table 2-3. For every commodity group, LDCs account for a smaller share of Canadian exports than is the case for any other MDC region. A slight exception to this is group 1 (Food, Live Animals, Beverages and Tobacco), for which the LDC share is somewhat higher in Canada (19.98) than in the EEC (13.15).[3]

Turning to the regional distribution of Canada's exports to the developing world, we see in Tables 2-1 and 2-2 that Latin America is the main trade partner accounting for about half of the exports to developing areas in both periods. This predominance holds true for most of the commodity groups. The only significant change over time has been the approximate doubling of the Middle East share.

In Tables 2-4 and 2-5, we present the commodity composition of Canadian exports to the different areas of the developing world. As may be expected,

TABLE 2-1
Destination of Canadian Exports, by Commodity Group, 1966-70

Commodity Group	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed and soc. world	Total, world
	(Per cent)						(Millions of U.S. dollars)
1 Food, live animals, beverages and tobacco	4.83	1.43	1.21	7.59	15.16	84.94	1,596.7
2 Industrial materials	1.37	.60	.22	1.39	3.57	96.43	2,906.0
3 Fuels and related goods	.00	.00	.00	.05	.06	99.94	677.4
Total primary commodities	2.26	.78	.49	3.13	6.65	93.35	5,180.0
4 Chemicals	3.95	.99	.31	4.72	9.97	90.03	427.0
5 Manufactured materials	2.01	1.12	.42	4.83	8.38	91.62	2,906.5
6 Machinery and transport equipment	1.52	1.04	.53	4.65	7.74	92.26	3,737.8
6.1 Durable consumer goods	.52	.97	.18	4.22	5.89	94.11	2,155.8
6.2 Capital goods	2.88	1.12	1.01	5.25	10.26	89.74	1,582.0
7 Miscellaneous manufactured articles	1.11	.90	.40	6.69	9.10	90.90	177.5
Total manufactures	1.85	1.06	.47	4.78	8.16	91.84	7,248.7
8 Other commodities	.40	.84	1.56	3.24	6.03	93.97	91.5
Total exports	2.01	.94	.49	4.08	7.52	92.48	12,520.3
Stage of fabrication							
9 Raw materials	2.81	.66	.59	2.03	6.09	93.91	3,444.3
10 Semi-finished products	1.93	1.09	.37	4.60	7.99	92.01	4,681.0
11 End products	1.46	1.01	.54	5.15	8.15	91.85	4,395.0

TABLE 2-2
Destination of Canadian Exports, by Commodity Group, 1971-75

Commodity Group	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed and soc. world	Total, world
	(Per cent)						(Millions of U.S. dollars)
1 Food, live animals, beverages and tobacco	5.26	3.11	2.68	8.93	19.98	80.02	3,106.3
2 Industrial materials	1.76	.54	.37	1.57	4.23	95.77	5,421.0
3 Fuels and related goods	.01	.01	.02	.17	.20	99.80	3,194.8
Total primary commodities	2.21	1.07	.89	3.14	7.31	92.69	11,722.1
4 Chemicals	4.40	.86	.48	5.14	10.88	89.12	823.5
5 Manufactured materials	2.44	.85	1.03	5.47	9.79	90.21	4,665.0
6 Machinery and transport equipment	1.23	1.15	1.08	4.19	7.66	92.34	7,878.8
6.1 Durable consumer goods	.27	.51	.41	3.04	4.23	95.77	4,815.6
6.2 Capital goods	2.74	2.16	2.14	6.01	13.05	86.95	3,063.2
7 Miscellaneous manufactured articles	.86	.93	.37	4.55	6.71	93.29	453.4
Total manufactures	1.81	1.02	1.01	4.69	8.54	91.46	13,820.6
8 Other commodities	1.46	2.51	.61	3.75	8.33	91.67	86.0
Total exports	1.99	1.05	.95	3.98	7.97	92.03	25,628.7
Stage of fabrication							
9 Raw materials	2.61	1.24	1.04	2.62	7.51	92.49	8,080.9
10 Semi-finished products	2.31	.72	.73	4.76	8.51	91.49	8,421.3
11 End products	1.16	1.20	1.07	4.46	7.89	92.11	9,126.5

TABLE 2-3
Comparison of Exports to Developing Countries as a Share of Total Exports, by Commodity Group, Canada, United States, Japan, the European Economic Community, and the average for All Developed Countries, 1971-75

Commodity group	Canada	United States	Japan	EEC	MDC average
			(Per cent)		
1	19.98	36.47	41.20	13.15	20.94
2	4.23	23.93	56.16	7.59	12.67
3	0.20	16.62	76.83	5.13	6.76
4	10.88	38.97	52.27	19.37	25.80
5	9.79	33.79	49.28	15.03	21.01
6	7.66	31.52	43.45	21.99	25.87
7	6.71	25.58	32.49	10.38	14.27
Total exports	7.97	31.22	44.30	16.56	21.34

the weight of total manufacturing is higher for the developing countries than for the developed and socialist countries (DSC) but the difference is extremely small. Further disaggregation begins to show important differences, however. The weight for Durable Consumer Goods is far lower for the developing world, especially in the period 1971-75, when it was 9.96 versus 19.56 per cent (Table 2-5). But, for capital goods, the portion going to the developing world is higher than the average for all manufactures.

For primary commodities, the LDC share is lower than the DSC one but, again, the difference is only slight. Within this group, a substantial difference in pattern is evident. Food items (group 1) is a far more important component in the export basket to LDCs (25 to 30 per cent over both periods) than to DSCs (10 to 12 per cent over the periods). On the other hand, Industrial Materials and Fuels show the reverse trend.

In Table 2-6, we compare, for the period 1971-75, the commodity composition of Canada's exports to LDCs with that of the United States, Japan, nine members of the EEC, and all MDCs exports to LDCs. From this table, we observe that primary commodities are much more important in Canada's exports to LDCs than in the export basket of other MDCs. The reverse is true for Total Manufactures, where in every group but group 5 (Manufactured Materials), Canada's export share is lower than that of other MDCs. The difference is specially accentuated for group 6 (Machinery and Transport Equipment), which has a weight of 29.5 per cent in

TABLE 2-4
Composition of Commodity Groups of Canadian Exports, by Area of Destination, 1966-70

Commodity group	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed and soc. world	Total, world
				(Per cent)			
1 Food, live animals beverages and tobacco	30.70	19.37	31.48	23.70	25.53	11.71	12.75
2 Industrial materials	15.82	14.65	10.26	7.92	11.02	24.20	23.21
3 Fuels and related goods	.01	.02	.01	.06	.04	5.85	5.41
Total primary commodities	46.53	34.04	41.76	31.68	36.59	41.76	41.37
4 Chemicals	6.71	3.59	2.16	3.94	4.52	3.32	3.41
5 Manufactured materials	23.27	27.60	20.05	27.45	25.87	23.00	23.21
6 Machinery and transport equipment	22.57	32.77	32.55	34.03	30.72	29.78	29.85
6.1 Durable consumer goods	4.45	17.72	6.49	17.78	13.48	17.52	17.22
6.2 Capital goods	18.12	15.05	26.06	16.25	17.24	12.26	12.64
7 Miscellaneous manufactured articles	.78	1.35	1.16	2.32	1.71	1.39	1.42
Total manufactures	53.33	65.31	55.91	67.74	62.82	57.50	57.90
8 Other commodities	.14	.65	2.33	.58	.59	.74	.73
Total exports	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Stage of fabrication							
9 Raw materials	38.56	19.22	32.95	13.66	22.25	27.94	27.51
10 Semi-finished products	35.97	43.30	28.24	42.07	39.70	37.20	37.39
11 End products	25.47	37.48	38.81	44.27	38.05	34.86	35.10
				(Millions of U.S. dollars)			
Total exports	251.20	118.16	61.21	511.31	941.89	11,578.38	12,520.27

TABLE 2-5
Composition of Commodity Groups of Canadian Exports, by Area of Destination, 1971-75

Commodity group	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed and soc. world	Total, world
				(Per cent)			
1 Food, live animals, beverages and tobacco	31.97	35.81	34.19	27.21	30.37	10.54	12.12
2 Industrial materials	18.63	10.83	8.26	8.33	11.23	22.01	21.15
3 Fuels and related goods	.03	.08	.22	.54	.31	13.52	12.47
Total primary commodities	50.63	46.72	42.68	36.08	41.90	46.07	45.74
4 Chemicals	7.09	2.61	1.64	4.15	4.39	3.11	3.21
5 Manufactured materials	22.30	14.70	19.78	25.03	22.36	17.84	18.20
6 Machinery and transport equipment	18.96	33.61	35.00	32.41	29.51	30.85	30.74
6.1 Durable consumer goods	2.52	9.06	8.11	14.36	9.96	19.56	18.79
6.2 Capital goods	16.44	24.54	26.89	18.05	19.56	11.29	11.95
7 Miscellaneous manufactured articles	.76	1.56	.69	2.02	1.49	1.79	1.77
Total manufactures	49.12	52.48	57.11	63.61	57.75	53.60	53.93
8 Other commodities	.25	.80	.22	.32	.35	.33	.34
Total exports	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Stage of fabrication							
9 Raw materials	41.26	37.11	34.52	20.77	29.68	31.69	31.53
10 Semi-finished products	38.06	22.38	25.32	39.28	35.08	32.67	32.86
11 End products	20.68	40.51	40.16	39.95	35.24	35.64	35.61
				(Millions of U.S. dollars)			
Total exports	510.66	269.57	243.43	1,019.88	2,043.55	23,585.11	25,628.66

TABLE 2-6
Comparison of Composition of Commodity Groups of Exports Destined for Developing Countries, Canada, United States, Japan, the European Economic Community, and the Average for All Developed Countries, 1971-75

Commodity Group	Canada	United States	Japan	EEC	MDC average
			(Per cent)		
1	30.37	18.07	1.76	8.47	10.67
2	11.23	8.93	2.36	1.80	4.36
3	.31	1.84	.60	1.47	1.38
Total primary commodities	41.91	28.84	4.72	11.74	16.41
4	4.39	10.66	7.86	13.18	11.00
5	22.36	11.40	34.84	21.26	21.53
6	29.51	42.11	46.43	46.53	43.88
7	1.49	4.69	5.29	6.09	5.71
Total manufactures	57.74	68.86	94.42	87.06	82.13
8	.35	2.30	.86	1.20	1.47
Total exports	100.00	100.00	100.00	100.00	100.00

Canada's export basket to LDCs and a weight of over 40 per cent in the export basket of other MDCs.[4]

Let us consider the pattern for each of the LDCs areas in turn: In exports to Asia, as shown in Tables 2-4 and 2-5, the weights of Food, Fuels, Manufactured Materials and Miscellaneous Manufactured Articles (groups 1, 3, 5, and 7) are very close to that of the LDC average. On the other hand, Industrial Materials and Chemicals (groups 2 and 4) are considerably more important while Machinery and Transport Equipment (group 6) is of lesser importance. This is particularly so for Manufactured Materials and Miscellaneous Manufactured Articles for the period 1971-75. For Africa, the pattern changes from the first period to the second. In the first period, primary commodities were slightly below the LDC average and Manufactured Goods slightly above, with the exact opposite situation in the second period. The difference is mainly due to the substantial rise in the weight of Food (group 1) from 19.37 to 35.81 per cent. As shown in Appendix B, this is attributable to much higher Canadian exports to Africa of wheat (SITC 041), which rose from about $14 million in the first period (12 per cent of the

basket) to $82 million in the second period (30 per cent of the basket), as food aid to the drought-stricken Sahel increased. For the Middle East, primary commodities are of slightly higher weight and manufactures slightly lower weight than the LDC average although in the second period the difference in very small. At a higher level of disaggregation, the major variation from the average occur for Food and Live Animals (group 1), which are considerably above, and Manufactured Materials, which are somewhat below the average. An important variation over time is the increase in the weight of Machinery and Transport equipment, which is above the average for both periods but far above so in the second period. This no doubt reflects the increased purchasing power of oil producing countries and their substantial investment in infrastructure. Latin America, which as we noted is the major market for Canada's exports, purchases relatively less primary commodities and relatively more manufactured goods than the LDC average. The most important difference in the Latin America basket is the higher weight for Manufactured Materials. In fact, Latin America is the only area where this value is above the average in the second period. The importance of this is largely attributable to paper and paper board products (SITC 641, which includes newsprints) accounting for about 10 per cent of exports to Latin America in both periods (See Tables B-1 and B-3 in Appendix B).

Despite this variation across the areas, the overall pattern for LDCs is not far from being representative of the individual areas.

At the bottom of Tables 2-4 and 2-5, the commodities are grouped in accordance with Statistics Canada classification by stage of fabrication. In relative terms, the major portion of Canadian exports to LDCs is in semi-finished and finished (end) products, which account for nearly 78 per cent of the total in the first period and 70 per cent in the second. For the DSCSs, the importance of these goods is slightly lower but shows the same trend going from 72 per cent in the first period to 68 per cent in the second period. Within the developing world, a far greater variation about the LDC average than revealed by the commodity group analysis is apparent. Asia stands out as being substantially above the average for raw materials and substantially below the average for end products. Africa's basket composition is not unstable over time as the figures suggest, the composition in 1971-75 being distorted by the large increase in wheat exports in reaction to the Sahelian drought. To allow for this effect somewhat, we revalued group 1 exports to Africa in 1971-75 by assuming the same growth rate as for all Canadian group 1 exports, (the African share in this being only 3 per cent). Using this projected value, we found the share of food in the African basket to be 20 per cent instead of the 35.81 per cent shown in Table 2-5. This is essentially unchanged from the value of 19.37 per cent for 1966-70 (Table 2-4). The share of other groups under this assumption is also quite stable over time. Semi-finished goods show the opposite tendency falling from 43 to 22 per cent of the basket.

The composition of the Middle East basket does not change very much over time and is not nearly as different from the LDC average as it is the case for Asia and Africa. Raw materials are somewhat higher than the average. Semi-finished products are below average and end products above the average particularly in the second period. We have seen earlier that Latin America is the only area where the weights of primary commodities is below the LDC average. This is shown even more dramatically by the stage of fabrication data: thus, whereas raw materials account for 22 and 30 per cent of the LDC basket in the two periods, the comparable values for Latin America are 14 and 21 per cent.

At a higher level of disaggregation (three-digit SITC), there are three main commodity categories with respect to total exports of Canada to the developing world (see Appendix B). Wheat (SITC 041) had a share of 12.3 per cent in the 1966-70 period and 19.7 per cent in the 1971-75 period. Road Motor Vehicles (SITC 732) had a share of 13.4 per cent in the first 9.9 per cent in the second period. Paper and Paper board (SITC 641) had shares of 8.6 per cent and 8.4 per cent in the two periods. In total, these products accounted for 34 and 38 per cent of Canadian exports to LDC in the two periods. The same three products comprised 31 and 30 per cent of Canadian exports to the DSC. Clearly, they are important not only in Canadian exports to the LDC world but also in Canada's total export basket.

Within the developing world, there are some important regional differences. Wheat is especially important in trade with Asia, Africa, and the Middle East; in the 1971-75 period, it represented respectively 28.1, 30.5, and 17.6 per cent of Canada's exports to these areas. On the other hand, trade with Latin America is dominated by Road Motor Vehicles and Pulp and Paper although, in the second period, Wheat was higher than Pulp and Paper.

To conclude our analysis of Canada's export to the developing world, one may observe three principal characteristics of these trade flows. First, the composition of these exports is not nearly as different from exports to DSC as one might expect, primary commodities accounting for about 35 to 40 per cent

in the LDC basket, compared with 40 to 45 per cent in the total export basket. Underlying the total for primary commodities, however, Food items are far more important in the LDC basket while Industrial Materials are far less important. Second, over time the importance of the primary commodity group has increased in the baskets both to the DSCs and the LDCs. Third, over 30 per cent of total exports is accounted for by only three commodity categories in both baskets: Wheat, Road Motor Vehicles, and Paper and Paper Board Products. Finally, one may add that these three characteristics are equally applicable to the individual areas within the developing world.

CANADIAN MERCHANDISE IMPORTS

Canadian imports with origin in developing countries were 8.70 per cent of total imports in the period 1966-70 and 11.92 per cent during 1971-75 (Table 2-7 and 2-8).

Behind these average figures, there are important differences by commodity group and by areas of origin. The developing world in the period 1966-70 provided 26.14 per cent of the imports of Food, Live Animals, Beverages and Tobacco, 20.70 per cent of the imports of Industrial Materials, and 66.72 per cent of the imports of Fuel and Related Goods. These percentages in the same order were 23.33, 15.50, and 80.09 per cent in the period 1971-75.

For the whole category of primary commodities, which includes the three commodity groups listed above, developing countries provided 37.01 per cent of Canada's imports in the period 1966-70 and 44.97 per cent in the period 1971-75. With respect to the imports of manufactured commodities, a group of special concern to developing countries, only 1.93 per cent of Canada's import of these commodities were provided by developing countries in the period 1966-70 and 3.03 per cent in the period 1971-75.

As a way of comparing the Canadian market for LDC exports with the market provided by other MDCs, we compare the above figures with the ones for other developed countries. For individual MDCs, the share of their imports with origin in LDCs in the period 1971-75 was: United States 33.90 per cent, Japan 48.64 per cent, nine members of the EEC 21.59 per cent, and the average for all developed countries was 24.76 per cent (Table 2-9).

As a counterpart to our argument of the previous section, one might expect that the smaller share of

TABLE 2-7
Area of Origin of Canadian Imports, by Commodity Group, 1966-70

Commodity group	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed and soc. world	Total, world
			(Per cent)				(Millions of U.S. dollars)
1 Food, live animals, beverages and tobacco	3.25	7.57	.46	14.86	26.14	73.86	869.7
2 Industrial materials	4.69	2.83	.26	12.91	20.70	79.30	657.4
3 Fuels and related goods	.00	2.78	12.11	51.84	66.72	33.28	679.4
Total primary commodities	2.68	4.68	3.99	25.66	37.01	62.99	2206.5
4 Chemicals	.11	.07	.06	.99	1.23	98.77	640.0
5 Manufactured materials	3.61	.62	.41	.37	5.01	94.99	1776.2
6 Machinery and transport equipment	.09	.02	.00	.03	.13	99.87	5503.3
6.1 Durable consumer goods	.00	.01	.00	.00	.01	99.99	2326.6
6.2 Capital goods	.15	.02	.00	.04	.22	99.78	3176.7
7 Miscellaneous manufactured articles	5.94	.05	.17	.28	6.44	93.56	1090.8
Total manufactures	1.49	.14	.11	.19	1.93	98.07	9010.3
8 Other commodities	1.08	.21	.13	1.11	2.52	97.48	241.8
Total imports	1.71	1.02	.85	5.12	8.70	91.30	11458.5
Stage of fabrication							
9 Raw materials	.77	3.21	5.97	26.16	36.11	63.89	1430.0
10 Semi-finished products	3.52	.83	.35	5.31	10.01	89.99	2364.5
11 End products	1.33	.67	.05	1.13	3.18	96.82	7664.1

TABLE 2-8
Area of Origin of Canadian Imports, by Commodity Group, 1971-75

Commodity group	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed and soc. world	Total, world
			(Per cent)				(Millions of U.S. dollars)
1 Food, live animals beverages and tobacco	2.75	8.54	.37	11.67	23.33	76.67	1912.8
2 Industrial materials	4.85	2.11	.09	8.45	15.50	84.50	1167.7
3 Fuels and related goods	.80	3.98	37.66	38.44	80.09	19.91	2159.3
Total primary commodities	2.08	5.23	15.67	21.99	44.97	55.03	5239.9
4 Chemicals	.22	.16	.10	.67	1.15	98.85	1338.2
5 Manufactured materials	3.47	.68	.32	1.38	5.85	94.15	3684.9
6 Machinery and transport equipment	.54	.02	.02	.20	.78	99.22	12070.0
6.1 Durable consumer goods	.07	.01	.00	.05	.13	99.87	5575.9
6.2 Capital goods	.95	.83	.03	.33	1.33	98.67	6494.1
7 Miscellaneous manufactured articles	10.52	.05	.20	1.07	11.92	88.08	2180.4
Total manufactures	2.21	.16	.11	.56	3.03	96.97	19273.4
8 Other commodities	1.83	.75	.28	1.75	4.60	95.40	276.1
Total imports	2.18	1.24	3.40	5.10	11.92	88.08	24789.5
Stage of fabrication							
9 Raw materials	.52	3.41	22.22	23.90	50.05	49.95	3675.8
10 Semi-finished products	3.49	.69	.31	3.99	8.48	91.52	4692.5
11 End products	2.17	.90	.07	1.21	4.36	95.64	16421.2

TABLE 2-9
Comparison of Imports from Developing Countries as a Share of Total Imports, by Commodity Group, Canada, United States, Japan, the European Economic Community, and the Average for All Developed Countries, 1971-75

Commodity group	Canada	United States	Japan	EEC	MDC average
			(Per cent)		
1	23.33	55.70	35.28	23.31	30.54
2	15.50	34.62	33.16	25.39	28.80
3	80.09	73.54	81.70	72.84	72.91
4	1.15	12.24	7.82	3.03	4.29
5	5.85	18.90	40.51	9.69	11.85
6	.78	9.84	7.29	1.84	3.36
7	11.92	38.11	30.19	11.48	17.46
Total imports	11.92	33.90	48.64	21.59	24.76

imports from LDCs for Canada is due to both Canada's and the LDCs' being exporters of primary commodities. The data of Table 2-9 do not support this explanation. If this was indeed the reason, Canada's share of primary commodities imported from developing countries relative to its total commodity imports from the third world would be lower than that for other developed countries. However, in all primary groups, the ratio of the primary commodity to total imports is in fact higher: for group 1, by a margin of 2.0 for Canada versus 1.2 for the average of all developed countries; for group 2, 1.3 versus 1.2; and for group 3, 6.7 versus 2.9. Even on a trilateral comparison, the result holds.[5]

If we return to the areas of origin of imports from the developing world, we find that, for commodity groups 1 and 2, Latin America supplied over half of Canada's imports from LDCs. On the other hand, for total manufactures, the main supplier within the developing world was Asia, which provided 77.2 per cent of Canada's imports from developing world in the period 1971-75. Within the manufactured commodities categories, Canada's imports from Asia were especially important for groups 5 and 7 (Table 2-8).

In Tables 2-10 and 2-11, we present the commodity composition of Canadian imports from different areas of the world. If we compare the developing world basket with that of the developed and socialist world, we observe that the proportion of primary commodities imported from the LDCs is substantially higher than that from the DSCs; it was 81.92 per cent versus 13.28 per cent in the 1966-70 period and 79.78 per cent versus 13.20 per cent in the 1971-75 period. Of course, the relative proportions are reversed for total manufactures.

In Table 2-12, we compare, for the 1971-75 period, the commodity composition of Canada's imports from LDCs with the one for imports to the United States, Japan, the nine members of the EEC, and the average for all developed countries of imports from LDCs. From this table, we observe that the composition of Canada's import basket is very similar to the one for the EEC and for the average for all MDCs. Slight differences are found for Fuels and Related products (group 3) and for Industrial Materials (group 2). The former group has a higher weight and the latter a lower weight in Canada's import basket.[6]

Some important differences in the compositions of Canada's imports from various areas of the developing world are to be found, however. Asia for example, contributed virtually no Fuels and Related Goods (group 3) to Canada's imports of this commodity (Tables 2-10 and 2-11). Hence, a more accurate comparison of the shares of the various components in the basket of imports from Asia with the averages of commodities imported from all developing countries would exclude group 3 from the lineup. This is done in Table 2-13, which also redistributes the averages of the commodity groups coming from all LDC areas. As shown in that table, the share of commodity groups 1 and 2 imported from Asia were substantially less than the LDC average during both time periods. Conversely, the shares of all manufactured goods imported from Asia were substantially higher than average, chiefly because imports in Manufactured Materials (group 5) and Miscellaneous Manufactured Articles (group 7) were so high.

Africa, the Middle East, and Latin America, on the other hand, all contributed above-average shares of primary commodity imports, and below-average shares of manufactured imports in the two time periods (Tables 2-10 and 2-11). Africa contributed more than half of Canada's Food imports from LDCs (group 1) in both periods, while the Middle East and Latin America contributed important shares of Canada's Fuel imports (group 3). The substantial rise in oil prices since 1973, however, reduced the relative importance of manufactured good in the import basket from the Middle East during the 1971-75 period, although the overall amount of manufactured imports actually rose during this time. Latin America, meanwhile, contributed around half of Canada's total imports from the developing world, although it contributed below-average amounts of Manufactured Materials (group 5) in both periods.

TABLE 2-10
Composition of Commodity Groups of Canadian Imports, by Area of Origin, 1966-70

Commodity group	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed and soc. world	Total, world
				(Per cent)			
1 Food, live animals beverages and tobacco	14.42	56.40	4.75	22.04	22.80	6.14	7.59
2 Industrial materials	15.73	15.95	1.76	14.48	13.65	4.98	5.74
3 Fuels and related goods	.81	16.14	84.02	60.07	45.46	2.16	5.93
Total primary commodities	30.15	88.49	89.83	96.60	81.92	13.28	19.26
4 Chemicals	.36	.36	.42	1.08	.79	6.04	5.59
5 Manufactured materials	32.68	9.50	7.41	1.11	8.92	16.13	15.50
6 Machinery and transport equipment	2.44	.76	.12	.24	.72	52.54	48.03
6.1 Durable consumer goods	.04	.15	.01	.00	.03	22.24	20.30
6.2 Capital goods	2.39	.61	.11	.24	.69	30.30	27.72
7 Miscellaneous manufactured articles	33.05	.47	1.91	.51	7.04	9.76	9.52
Total manufactures	68.52	11.08	9.86	2.95	17.47	84.46	78.63
8 Other Commodities	1.33	.43	.31	.46	.61	2.25	2.11
Total Imports	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Stage of fabrication							
9 Raw materials	5.64	39.31	87.23	63.81	51.80	8.73	12.48
10 Semi-finished products	42.47	16.76	8.48	21.41	23.74	20.34	20.64
11 End products	51.89	43.93	4.29	14.78	24.46	70.93	66.89
				(Millions of U.S. dollars)			
Total Imports	196.07	116.80	97.90	586.21	996.99	10,461.59	11,458.59

From this comparison of import baskets, we conclude that the major differences among areas in the developing world arise in the primary commodities category. That is, most of the differences in import basket are due to the endowment of natural resources in the different areas of the developing world. The second striking finding is the high weight for total manufactures in the import basket from Asia. At a higher level of disaggregation, the shares of imports in groups 5 and 7 from Asia are even greater than those in the import basket with DSC origin. But one should keep in mind, as shown in Table 2-8, that the total import flows into Canada for these groups of commodities are still fairly small. In the 1971-75 period, Asia provided only 3.47 per cent of total commodities imports of group 5 and 10.52 per cent of Canadian imports of group 7.

At the bottom of Tables 2-10 and 2-11, the commodities are grouped in accordance with Statistics Canada classification by stage of fabrication. From these tables, it can be seen that the composition of Canada's import basket from Asia more closely resembled that of the average for DSCs than for LDCs and that, within the developing world, there was a great variation around the LDC average. Asia's basket stands out as being substantially below average for raw materials and substantially above average for semi-finished products and end products, while Africa's basket was composed of relatively fewer amounts of raw materials and semi-finished products than end products. For the Middle East, raw materials formed 87.23 per cent of the imports basket in the first period and 96.8 per cent in the second. Of course, this increase was due entirely to the rise in oil prices during the second period. Meanwhile, the composition of Canada's imports from Latin America by stage of fabrication was fairly stable with the main change being the relative increase in raw materials. Again, this change was due to the increase in oil prices.

At a higher level of disaggregation (3-digit SITC), Canada's total imports from the developing world are dominated by four main commodity categories (see Appendix C, Tables C-1 and C-2), Petroleum crude and partly refined for further refining (SITC 331) had a share of 34.2 per cent in the 1966-70 period and a share of 54.3 per cent during 1971-75. Petroleum Products (SITC 332) had a share of 11.3 per cent in the first period and a share of 4.3 per cent in the second. Sugar and Honey (SITC 061)

TABLE 2-11
Composition of Commodity Groups of Canadian Imports, by Area of Origin, 1971-75

Commodity group	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed and soc. world	Total, world
				(Per cent)			
1 Food, live animals beverages and tobacco	9.73	53.35	.84	17.66	15.11	6.72	7.72
2 Industrial materials	10.49	8.04	.12	7.81	6.13	4.52	4.71
3 Fuels and related goods	.00	28.07	96.40	65.67	58.55	1.97	8.71
Total primary commodities	20.22	89.46	97.36	91.14	79.78	13.20	21.14
4 Chemicals	.55	.69	.16	.71	.52	6.06	5.40
5 Manufactured materials	23.67	8.19	1.41	4.01	7.29	15.89	14.86
6 Machinery and transport equipment	12.13	.64	.25	1.92	3.18	54.85	48.69
6.1 Durable consumer goods	.76	.09	.00	.24	.25	25.58	22.49
6.2 Capital goods	11.37	.55	.25	1.68	2.93	29.34	26.20
7 Miscellaneous manufactured articles	42.49	.34	.73	1.84	8.80	8.80	8.80
Total manufactures	78.84	9.86	2.55	8.48	19.79	85.59	77.75
8 Other commodities	.94	.67	.09	.38	.43	1.21	1.11
Total imports	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Stage of fabrication							
9 Raw materials	3.53	40.97	96.81	69.50	62.28	8.41	14.83
10 Semi-finished products	30.36	10.52	1.74	14.80	13.47	19.67	18.93
11 End products	66.10	48.51	1.45	15.70	24.24	71.92	66.24
				(Millions of U.S. dollars)			
Total imports	539.83	306.15	843.63	1,264.13	2,953.75	21,835.71	24,789.46

TABLE 2-12
Comparison of Composition of Commodity Groups of Imports from Developing Countries, Canada, United States, Japan, the European Economic Community, and the Average for All Developed Countries, 1971-75

Commodity group	Canada	United States	Japan	EEC	MDC average
1	15.11	19.46	10.60	15.67	15.93
2	6.13	7.01	17.55	12.81	12.60
3	58.55	40.28	57.87	54.76	51.57
Total primary commodities	79.78	66.75	86.02	83.24	80.10
4	.52	1.35	.70	1.06	1.18
5	7.29	10.16	7.02	9.03	8.69
6	3.18	7.98	1.18	1.78	3.25
7	8.88	11.97	2.55	4.58	6.12
Total manufactures	19.79	31.46	11.45	16.45	19.24
8	.43	1.79	2.53	.31	.66
Total imports	100.00	100.00	100.00	100.00	100.00

had a share of 4.4 per cent during 1966-70 and 5.4 per cent during 1971-75. And Clothing (SITC 841) had a share of 4.1 per cent in the period 1966-70 compared with 5.3 per cent later. In total, these four commodity categories accounted for 54 per cent of Canada's imports from LDCs in the period 1966-70 and for 69.3 per cent during 1971-75. On the other hand, these same four commodity categories accounted for only 1.7 and 1.9 per cent of Canada's imports from DSCs in the two periods.

Within the developing world, there are some important regional differences. Petroleum (SITC 331) is especially important in trade with the Middle East and Latin America in that order. On the other hand, Sugar (SITC 061) is important only in trade with Africa. Finally, Clothing (SITC 841) represents 19.9 per cent of the trade with Asia in the 1966-70 period and 26.4 per cent during the 1971-75 period.

Finally, we study the list of products for which Canada relies mainly on the developing world to supply, as shown in Appendix C, Tables C-3 and C-4. The share of Petroleum crude and partially refined for further refining (SITC 331) coming from the developing world was 99.5 per cent in the 1966-70 period and 98.8 per cent in the 1971-75 period. The share of Canada's Coffee (SITC 071) coming from the third world during 1966-70 was 78.7 per cent and it was 65.6 per cent during 1971-75. The proportion of Petroleum Products (SITC 332) imported from developing countries was 65.6 per cent in the first period and 58.3 per cent in the second. The share of Sugar and Honey (SITC 061) originating with developing countries was 70.6 per cent during 1966-70 and 56.6 per cent during 1971-75. And the share of Clothing (SITC 841) from LDCs was 30.3 per cent in the 1966-70 period and 45.9 per cent in the following period.

TABLE 2-13
Composition of Commodity Groups, Excluding Fuels and Related Goods, of Canadian Imports from Asia and from All Developing Countries, 1966-70 and 1971-75

	Asia		Total, developing world	
Commodity group	1966-70	1971-75	1966-70	1971-75
	(Per cent)			
1	14.4	9.7	41.8	36.5
2	15.7	10.5	25.0	14.7
Total primary commodities	30.2	20.2	66.8	51.2
4	.4	.5	1.4	1.3
5	32.7	23.7	16.4	17.6
6	2.4	12.1	1.3	7.7
7	33.1	42.5	12.9	21.2
Total manufactures	68.5	78.8	32.0	47.8
8	1.3	.9	1.1	1.0
Total non-fuels imports	100.0	100.0	100.0	100.0

Part II
Canada's Tariff Barriers to Trade with Developing Countries

3 Approaches to the Measurement of Tariff Bias: An Overview

REVIEW OF THE LITERATURE ON BIAS AGAINST LDCs

Barber's seminal article in 1955 first developed the basic notion of effective rates of protection (ERP): the extent of protection to an industry is the net effect of higher prices permitted on its output by its own tariff, and the higher cost imposed by the tariffs on its inputs. Balassa (1965) elaborated this fully and estimated ERPs for several advanced countries, finding that protection increased with the degree of processing. This "cascaded" structure of tariffs has since been found in many empirical studies of both developed and developing countries.[1] The usual explanation for such a structure is that governments wishing to promote a greater degree of processing of raw materials impose higher tariffs on final manufactures, lower ones on intermediate inputs, and very low ones on raw materials.

Whatever the explanation of such a structure,[2] its implication for LDC exports is, as Balassa states, that it imparts a "bias in the industrial countries' tariff structure against the exports of processed goods from less developed areas " (Balassa, 1968, p. 583). Johnson pointed to the large dispersion in the rates of tariffs despite low overall averages (about 5 to 10 per cent on industrial products at present) which generally means that "tariff rates in which LDCs are particularly interested are relatively high" (Johnson, 1967, p. 96). Many other writers agree that advanced country tariffs "bias imports from LDCs towards comparatively unprocessed primary products" (Stern, 1973, p. 874), and that the developing nations "correctly regard this [tariff structure] as retarding the rate of growth of their exports of the very goods in which their present factor endowments give them a comparative advantage." (McCulloch, 1976, p. 38). Contrary views are few, but one that was at least more guarded on the magnitude of bias is that of Reuber (1968) who concluded that, in the case of Canada's pre-Kennedy tariff structure, "LDCs are not discriminated against in the manner suggested," due account being taken of Commonwealth preferential rates. We return later to empirical studies on bias in Canada's tariff structure.

Table 3-1 (which is reproduced from Balassa, 1968, p. 374), is probably the key piece of evidence on the issue for pre-Kennedy tariff levels, and it seems to show a strong bias against LDC manufactures. These latter face tariffs of 16.8 per cent, nominal, or 32.8 per cent, effective, while world exporters as a whole faced values of 11.4 and 19.1 per cent. This set of figures was used by Balassa to dispute Reuber's 1964 finding that tariffs were too low to matter much. Balassa argued that Reuber's projected 25 per cent increase in LDC manufactured exports under tariff elimination was an underestimate because the latter disregarded the higher tariff facing LDC exports and did not use the "relevant" (Balassa's word) effective tariff, which is higher still. Balassa's own estimates of the effect of tariff elimination yielded an increase of 32 to 55 per cent in LDC exports, depending on the degree of disaggregation. This occasioned a debate in a "Comment" by Leith and Reuber (1968), followed by a "Reply" (1970), and a "Rejoiner" (1971). The conclusion of this debate is a matter of interpretation, as Balassa agreed to a possibly lower range of 22 to 35 per cent, but retained the opinion that 25 per cent as a single figure estimate was too low.

This literature does not unequivocally conclude that bias exists; for our purposes, it is more useful to delineate four important issues that arise, and use these as lessons for further analysis. First, it is not merely the level of tariffs but, in the final analysis, their restrictive impact that measures the extent of bias. Secondly, there is some debate as to whether one should use nominal or effective tariffs or a combination thereof, though the relevance of ERP may be questioned given the recent criticism of what exactly ERP means, and whether it is for any purposes an adequate proxy of the general equilibrium effects of tariff changes.[3] The third issue concerns the need for some estimates of elasticities, whether they be demand and supply elasticities, or implicit derived values of import elasticities. Without these one cannot possibly calculate the trade-restricting effect of any tariff, be it nominal or effective. The fourth point of significance is the need to do the calculations at a fairly high degree of disaggregation. Using a 28 commodity disaggre-

TABLE 3-1
Averages of Nominal and Effective Tariffs on Manufactures Imported, Selected Industrial Countries

Country	Tariff averages on the total imports of manufactures			Tariff averages on the imports of manufactures from developing countries		
	Nominal	Effective	Effective/ nominal ratio	Nominal	Effective	Effective/ nominal ratio
	(Per cent)			(Per cent)		
United States	11.6	20.0	1.72	17.9	35.4	1.98
Britain	15.5	27.8	1.79	19.5	37.3	1.91
European Economic Community	11.9	18.6	1.56	14.3	27.7	1.94
Sweden	6.8	12.5	1.84	9.8	21.2	2.16
Japan	16.2	29.5	1.82	18.0	36.7	1.07
Industrial Countries	11.4	19.1	1.68	16.3	32.8	2.01

gation, Balassa's results were as much as 70 per cent higher than his estimates at the aggregate level.

In what follows, we bear in mind these lessons as we develop an analytical framework which will permit a test of the hypothesis that tariffs are biased against LDCs. Before doing so, it may be useful to deal with one final point. The literature dealt with empirical values based on pre-Kennedy round tariffs, which averaged 10 to 15 per cent overall for developed countries; we are faced today with post-Kennedy averages of 5 to 10 per cent and soon to come are presumably even lower rates from the Tokyo round. Are such low tariffs still important? The answer for LDCs may be yes because of the large degree of dispersion remaining in tariff structures. Indeed, dispersion may have become the issue going into Tokyo, where height was the issue going into Kennedy.[4] Consequently, the possibility of bias remains an open question requiring empirical analysis.

AN ANALYTICAL FRAMEWORK FOR MEASUREMENT OF TARIFF BIAS

The concept of tariff bias discussed in the literature and earlier empirical estimates (which we present in the section below), presume that the economic variable possessing this biased character is the size, or height, of the tariff. But in fact, the ultimate interest of tariff analysis is to measure the restriction in trade flows. This is particularly so for developing countries whose interest is not in the numerical values of tariffs and their averages, but in the potential amount of their exports such tariff walls are impeding. As Johnson has stated, "the really difficult problem is to assess the extent to which these barriers actually restrict the exports of the less developed countries" (Johnson, 1967, p. 102). A full answer to this requires a general equilibrium framework estimating free trade flows, and since this is far from being readily available to economic researchers, many attempts have been made to devise a "height" estimate which approximates the restrictive effects. Balassa speaks of the "long line of investigators [whose] estimates of the height of national tariff levels are designed to give expression to the restrictive effect of duties on trade flows" (Balassa, 1965, p. 573). He doubts the success of these exercises, and his ERP work is put forth as an improved proxy of restrictive effects. Just as his predecessors, he too has been criticized on the adequacy of ERPs as an index of the restricted effect.

Thus, for example, Bhagwati and Srinivasan (1973) conclude that a measure of ERP cannot in fact predict domestic resource shifts in general. Ethier states that "on balance the case for using any specific array of effective rates rather than nominal rates . . . as measures of the resource-allocation effects of a tariff structure, is quite weak" (Ethier, 1977, p. 242). The essence of these criticisms is that a "correct" set of values for ERPs would require exactly as much information as would permit one to build a general equilibrium model and simulate the effects of tariff changes on output, trade flows, and resource allocation.[5] On the other side, Taylor and Black (1974) and especially De Melo (1978) have demonstrated that in practice for small tariff changes the resource shift estimates yielded by ERP analysis are quite similar in direction and even magnitude to those yielded by general equilibrium analysis.

Though it is fairly obvious that the height of tariffs does not measure the restrictive effect, the point is crucial to our analysis and bears some elaboration. Throughout the study, we consider only the first-order restrictive effect, that is, we ignore the resource reallocation consequences via goods-price, factor-price, and demand changes. This permits one to use partial equilibrium import elasticities μ_i for good i. If the tariff rate is t_i and the current import level M_i, then the restrictive effect can be defined as the change

in imports ΔM_i resulting from the tariff elimination. Assuming perfectly elastic import supply at world prices, we obtain:

$$\frac{\Delta M_i}{M_i} = (t_i/(1+t_i)) \cdot \mu_i \qquad (3.1)$$

The relative size of the restrictive effects for two goods 1, 2 ($\Delta M_1/M_1 : \Delta M_2/M_2$) is clearly not given by the ratio of the tariff heights alone ($t_1 : t_2$), but depends further on the relative size of the import elasticities. Thus, the rank ordering by tariff heights may be reversed for a pair of goods, if a high elasticity is associated with a low tariff and vice versa. Testing for bias by measuring tariff height may give misleading results in such cases. Let w_i^j = weight of good i in the basket of imports from region j; then we define the "height of the tariff" facing region j as:

$$\psi^j = \sum_{i=1}^{n} w_i^j \cdot t_i \qquad (3.2)$$

The measure of overall restrictive effect facing j, which we shall call the "restrictive depth of a tariff," is defined as:

$$\delta^j = \sum_{i=1}^{n} \left(w_i^j \cdot \frac{t_i}{(1+t_i)} \cdot \mu_1\right) \qquad (3.3)$$

It can be readily shown that for two different regions M and L, values of ψ^j may indicate a bias in tariff height against one region (say L), but this need not mean the tariff depth is similarly biased.[6]

Therefore, in addressing oneself to the question of bias, it is not enough to measure tariff heights under various assumptions as is done in the literature, for ultimately bias is in the degree of trade restricted by tariffs. However, the height measure is not thereby made uninteresting for it is still important to know how much of the restrictive effect is due to the height of tariffs and how much to the values of elasticities. Consequently, we develop a set of measures pertinent to the tariff barriers and bias issues both for tariff height, and for tariff depth. Before we elaborate on the precise formulas used, a few observations on the data are in order in as much as their character affects the specifications.

In addition to the import data by region described in Chapter 2, the analysis used a GATT-tape giving most favoured nation (MFN) tariff rates at the five-digit SITC level for Canada and the European Economic Community (EEC).[7] This was aggregated to the four-digit level weighting by the value of imports, providing MFN tariffs and imports by region of origin (the classification in Appendix A) for 610 commodities over the period 1967-75. A number of shortcomings of this data are evident. First, effective tariffs cannot be used in the analysis regardless of one's view on whether they do or do not measure trade flow restrictions, simply because the rectangularity of Canada's Input-Output Table yields ERP estimates for industry categories and not for commodity groups.[8]. Secondly, MFN rates for Canada may overstate somewhat the size of tariffs faced by developing countries given the application of the Commonwealth tariff schedules. In Chapter 4, we show that the effect of this is not so great as to cast doubt on the findings using only MFN rates. Correcting for these deficiencies would have entailed a considerable effort in reclassification of the available data, or reliance upon a very costly collection of the same data from alternate sources. The advantages of this data bank is that it permits comparison between Canada and the EEC, consideration of special lists of goods such as those of Hal Lary, and use of data published by the United Nations for export weights.

Tariff Height Equations

We denote as C, E, Canada and the EEC, i as the commodity category, n as the number of categories, and j as the region of origin of imports. Following equation (3.2) the variables are; $HM_j^{C(E)}$ = height of tariff wall facing region j in country C (or E) using j = import weights, $M_{ij}^{C(E)}$ = imports into C (or E) of commodity i from j, $M_j^{C(E)}$ = total imports to C (or E) from j, $t_i^{C(E)}$ = nominal ad valorem tariff in C (or E) for commodity i, $HX_j^{C(E)}$ = height of tariff wall facing region j in C (or E) using j's export weights, $X_i j$ = exports of commodity i from j to world, X_j = total exports from j to world. The formulas applied are then:

$$HM_j^C = \sum_{i=1}^{n} \left(\frac{M_{ij}^C}{M^C j} \cdot t^C{}_i\right) \qquad (3.4)$$

and

$$HM_j^E = \sum_{i=1}^{n} \left(\frac{M_{ij}^E}{M_j^E} \cdot t^E{}_i\right) \qquad (3.5)$$

For each region j, this measures the average height of the tariff facing the import basket from that region. This is not the place to discuss the "tariff weighting" question in detail.[9] Suffice it to say that, while we

recognize the shortcomings of import weights, which are said to distort results because low tariffs yield high imports and vice versa (Balassa, 1965, p. 574), it is not clear what the alternatives are. The importing country's production or value added are surely not relevant since our concern is not with the domestic effects in the importing country; exporting country production weights may make some sense, but present a formidable data-gathering task. Ideally of course, it is import weights under free trade that one should use; however, these are not knowable and one reverts perforce to actual trade flows.

A heuristic argument can be made that the distortions affecting the pattern of Canadian imports from j may be counterbalanced by distortions of other imports from j. In any event, j's global export basket is a larger sample and a viable empirical alternative to the basket of Canadian imports from j. If the export basket is not less distorted, it is at least differently distorted and may indicate the sensitivity of our tariff height measure to the weights used. Therefore, we stipulate two export weighted equations:

$$HX^{C}_{j} = \sum_{i=1}^{m} \left(\frac{X_{ij}}{X_j} \cdot t^{C}_{i}\right) \tag{3.6}$$

and

$$HX^{E}_{j} = \sum_{i=1}^{m} \left(\frac{X_{ij}}{X_j} \cdot t^{E}_{i}\right) \tag{3.7}$$

Data for the export values were obtained by aggregating the country data from the United Nations *Yearbook of International Trade Statistics* to the regional levels defined for this study, and averaging for the 1968-71 period. The source did not permit greater detail than three-digit SITC (m = 177), nor does it permit netting out of intraregional trade. This last may, however, work to our advantage, as it enlarges the size of the trade network estimated and increases the chances of counterbalancing the tariff distortions in the data.

The above four equations (3.4 to 3.7) are specified for an overall average height calculation in which all goods (n or m commodity groups) are included. As we note in a later section of this chapter, empirical estimates of bias have also been restricted to a subset of goods "of special interest to developing countries." In Chapter 4, these equations are in fact computed for i defined as an element in various alternative subsets: "special interest goods," stage of fabrication groups, imports exclusive of goods under non-tariff barriers (NTBs), and so on. Also, computations are done at different levels of aggregation, (SITC 1,2,3 digit) to observe the aggregation effect emphasized in Balassa (1968) of choosing the level of aggregation. This is done in detail in Chapter 4, though a summary and comparison with earlier results is given in this chapter in a later section. First, however, we develop the restrictive depth formulas.

Tariff Depth Equations

To assess the impact of tariff barriers on trade flows, one might consider three different approaches: general equilibrium models of world trade simulating the effect of nominal tariff cuts; the use of effective rates of protection by country, as a proxy for the general equilibrium effects; more limited partial equilibrium models. The first of these is still an infeasible option, involving an enormous cost in estimating and simulating a model with many goods, many countries, incorporating I-0 relations, production and demand functions, demand, supply, and/or trade elasticities, and a whole host of substitution and cross-elasticities. ERP measures attempt a shortcut to the estimates of the indirect effects of a tariff cut obviating the need for all the domestic parameters noted. Balassa (1965), (1968), and the ensuing exchange with Leith and Reuber (1969) does just this. But given our interest in estimating first-order trade flows changes rather than analysing domestic resource shifts, the discussion about the relative merit of ERP or general equilibrium (see above) is not directly relevant.

The third approach to the measurement of tariff change effects—limited models with nominal tariffs—has been the one most widely taken.[10] Our analytical framework is in the spirit of this third approach of limited models; the emphasis is on considerable commodity disaggregation and origin of import details, including some hypothesized trade diversion effects, but ignoring all indirect effects of tariff cuts. The analysis is in two steps: first the total change in imports into Canada is estimated,[11] then this incremental flow is distributed among the thirteen supplying regions.

Assume for good i that imports (M_i) and domestic output (S_i) are perfect substitutes, and as before that supply of imports is fully elastic at world prices (P^{w}_{i}). Then the effect of reducing the nominal tariff (t_i), via the reduction in the domestic tariff laden price [$P^{T}_{i} = P^{w}_{i}\ (1 + t_i)$], is an increase in imports (ΔM_i) equal to a decline in domestic supply

(ΔS_i) plus a rise in demand (ΔD_i). If P_i signifies the price change, and ϵ_i, η_i are the domestic demand and supply elasticities, then:

$$\Delta M_i = \frac{\Delta P_i}{P_i^T} \cdot [\epsilon_i \cdot D_i + \eta_i \cdot S_i] \quad (3.8)$$

Define r_i as a policy parameter reflecting the degree of tariff cut, taking values 0 to 1, then the change in the tariff rate is given as $\Delta t_i = r_i \cdot t_i$, which yields a price change $\Delta P_i = \Delta t_i \cdot P_i$. Substitution in (3.8) gives:

$$\Delta M_i = r_i \cdot \frac{t_i}{(1 + t_i)} \cdot [\epsilon_i \cdot D_i + \eta_i \cdot S_i] \quad (3.9)$$

Finally, letting $m_i = S_i/M_i$, or the ratio between domestic supply and imports and using the identity $D_i \equiv S_i + M_i$, we substitute to obtain:

$$\Delta M_i = r_i \cdot \frac{t_i}{(1 + t_i)} \cdot [\epsilon_i (1 + m_i) + \eta_i (m_i)] \cdot M_i \quad (3.10)$$

But the term inside the square brackets is exactly equivalent to the import elasticity for good i, which follows from its definition: $\mu i = \frac{\Delta M_i}{M_i} \Big/ \frac{\Delta P_i}{P_i}$ and the equivalence of $\frac{\Delta P_i}{P_i}$ to $r_i \cdot \frac{t_i}{(1 + t_i)}$ shown above. Therefore, the import change effect can be written in percentage terms:

$$\frac{\Delta M_i}{M_i} = r_i \cdot \frac{t_i}{(1 + t_i)} \cdot \mu_i \quad (3.11)$$

This formulation differs from equation (3.1) only by the term which allows calculating effects of tariff cuts other than full elimination, for evaluation of more complex—and more realistic—"bias" effects in the tariff depth analysis. That is, we consider in Part IV not only the full restrictive effect ($r_i = 1.0$ for all i) but also the potential impact on imports of partial and differential tariff cuts ($r_i < 1.0$, and not equal for all i).

PRIOR EVIDENCE ON BIAS IN CANADIAN TARIFFS

In the next chapter, we present in detail our estimates of Canadian tariff height (equations 3.5 to 3.8). First we review briefly the existing studies on bias by Reuber (1964), (1968), (1972), Yadav (1972), and Bain (1976). All of these studies implicitly defined bias as a higher value of the variable HM^j (equation 3.5) for j = LDC compared to j = MDC. Comparable results are summarized in Table 3-2, where we include our own results from Chapter 4. The category "Lary goods" refers to a list of manufactured goods said to be of special interest to LDC exporters because of their high unskilled labour intensity; it originates from the work of Hal Lary (discussed further in Chapter 4). A number of values in the studies were corrected, this being shown in brackets.[12] Only one such change is at all significant; Reuber's post-Kennedy estimates, item 4: tariffs on Lary goods facing LDCs are recalculated as 9.6 instead of 4.8.

Let us look at the values more closely. In his 1964 study, Reuber found that 1960 tariff rates were far lower on LDC imports than on those of other countries and concluded that "the effective average rate of taxation faced by LDC exports . . . is lower than the general structure of tariffs" (Reuber, 1964, p. 13). In a later study, he found the same for 1966 values: tariffs in Canada were lower on the entire basket of LDC imports than on the MDC basket, whether one looked at all imports (4.1 versus 8.3) or dutiable imports alone (11.8 versus 17.0). However, the situation was mildly reversed when one considered only the Lary list of goods, for which the tariffs were respectively 11.8 and 10.1. Reuber was strongly criticized by Yadav (1972) whose results show a much greater degree of bias for the Lary goods with respective values of 16.2 and 10.0 per cent. The difference in the two estimates is attributable to taking Hong Kong out of the MDC group where Reuber had listed it and including it among the LDCs. Since Hong Kong was at the time a major exporter of textile and other labour intensive goods in the Lary list, its weight among all LDC imports of such goods into Canada was considerable.

The other three estimates all refer to post-Kennedy Round tariffs. Reuber's estimates using 1966 import weights show little change in the results for "all goods" and "dutiable imports"; for Lary goods, however, there appeared to be a dramatic reversal of the slight bias found in Reuber's earlier study for 1966 shown in Table 3-2, as the tariff rates were 4.8 in comparison with 8.8 per cent for MDCs. In his 1968 work, Reuber points to this and disagrees with the common view that Kennedy Round reductions were lowest on products of special importance to LDCs.[13] There is some reason to doubt this interpretation, for the 4.8 value appears to be incorrect. Reuber (1968, Table 8) shows this as the value for all LDCs, while the values for those subject to MFN and British Preferential (BP) rates

TABLE 3-2
Summary of Evidence on Bias in Canadian Tariff Level

Study	Tariff year	Imports	Average tariff rate		
			LDC	MDC	World
			(Per cent)		
Reuber	1960	all goods	3.5		9.7
Reuber	1966	all goods	4.1	8.3	8.0
		Lary goods	11.8	10.1	9.9 (10.2)
		dutiable imports	11.8	17.0	16.5
Yadav	1966	Lary goods	16.2	10.0	10.2
Reuber	1966 (post-Kennedy)	all goods	3.5	7.1	6.8
		Lary goods	4.8 (9.6)	8.8	8.7 (8.9)
		dutiable imports	10.0	14.0	14.2 (13.4)
Bain	1973-74	dutiable imports	18.5		15.0
Corbo-Havrylyshyn	1972-75 (post-Kennedy)	all goods	5.0	6.7	6.5
		Lary goods	16.9	8.5	9.0

respectively are 11.2 and 6.5; the weighted average of these latter, using import weights implicit in the comparable set of figures for pre-Kennedy tariffs in the same study, is 9.6. If we accept the values 11.2 and 6.5 as correct (and this seems in line with the respective pre-Kennedy rates of 13.7 and 8.1), then the conclusion on post-Kennedy rates would remain that there is a bias in such goods against LDCs.[14]

The estimate by Bain is in sharp conflict with that of Reuber. The latter shows that tariffs against LDCs on dutiable imports are considerably lower than against MDCs, while the former shows quite the opposite. It is not inconceivable that changing weights between 1966 and 1973 might explain this for, as noted in Chapter 2, this period has seen a considerable increase in the imports of manufactured goods from LDCs. These goods have much higher tariffs; therefore, their increasing weight would tend to raise the tariff average faced by LDCs above the 10.0 value of Reuber.

The results of our disaggregated computations using data not available to earlier authors tend to confirm Reuber's conclusion on the tariff rates for "all goods," (we find values of 5.0 for LDC, and 6.7 for MDCs) but for Lary goods our results confirm the findings of Yadav and cast doubt on Reuber's favourable interpretation of the Kennedy reductions. Using 1972-75 import weights the values are 16.9 and 8.5 respectively, a considerable worsening of the relative position of LDCs, the ratios of the rates being 2.0 compared to 1.17 pre-Kennedy. Part of the difference is undoubtedly explained by the treatment of Hong Kong, as Yadav's adjustment showed. However, the same proportional adjustment applied to the 9.6 post-Kennedy figure would yield only a value of 13.2 (=9.6×16.2/11.8), still short of our value of 16.9. The rest of the difference is attributable to a combination of: a relative shift of the import basket from LDCs to higher duty products, a greater degree of disaggregation in our computations, and an erosion of the significance of the British Preferential scheme.

To conclude, the weight of the evidence appears to support the view that Canada's tariff structure is biased to some extent against the import of a particular list of manufactured goods said to be "of interest" to LDCs. However, one must be aware of too narrow an interpretation of bias. Why should one restrict the measurement of region specific averages to this list of goods? The argument is usually stated in the terms of comparative advantage, but this then casts doubt on the validity of this list, for two reasons. First, the list accounts for only 18 per cent of total LDC imports into Canada (see Table 8-1, below), and LDCs provide only 4 to 5 per cent of total imports to Canada for these goods. These low values cannot be explained by restrictions alone. Secondly, it is by no means obvious that a comparative advantage list of goods should not include many raw materials, for surely many LDCs are, and will continue to be, important sources of non-manufactured goods on efficiency grounds alone, regardless of barriers to their manufactured exports.[15]

It is therefore not irrelevant to look at the global average tariff, and on this score the bias is reversed, being against the MDCs. It is equally valid to test the hypothesis for other subsets of the import basket, such as finished goods, raw materials, or other "special-interest" lists. Indeed, it will be necessary to do so more finely than has been done by earlier studies before concluding anything on the bias hypothesis. This is the task to which we turn in Chapter 4.

4 Empirical Evidence for Tariff Bias: A Comparison of Canada and the EEC

In this chapter, we present a detailed analysis of bias in Canada's tariff height as defined earlier, testing the hypothesis under several definitions of relevant commodity groups and also considering the bias against each of the twelve regions into which the LDC group is classified. For purposes of comparison, parallel estimates are done for the EEC. We first consider tariff heights faced by the entire developing world compared to the developed world. We next break down the LDCs into 12 regions, then test the sensitivity of our measure to the use of export weights and the incorporation of remaining BP rates, and follow with a brief summary.

A GLOBAL OVERVIEW OF TARIFF HEIGHT

The Structure of Canadian and EEC Tariffs

Before we discuss the tariff height estimates, it may be useful to review briefly the values of tariffs by major commodity groups. Table 4-1 shows the world weighted tariff averages for the 1-digit SITC groups,[1] plus the weight in the LDC and MDC import baskets. The overall average and the pattern are much the same for both Canada and the EEC: higher for manufactures than for primary commodities, the usual cascading effect. This can be seen even more clearly in tariff averages by stage of fabrication — raw materials, semi-finished goods, and end products. These values (see Appendix Table F-1) are for Canada 0.8, 8.4, and 7.3, and for the EEC 1.9, 6.2, and 10.1. Note that for Canada the last stage of fabrication is less protected than the intermediate one, perhaps reflecting the greater resource endowment of Canada and the consequently greater policy significance given to secondary processing of raw materials.[2] Despite the general similarities some differences in pattern exist. Tariff rates on Beverages and Tobacco are considerably higher in the EEC; Manufactured Goods by Material (SITC 6) face higher tariffs in Canada, while the reverse is true for Machinery and Transport Equipment.

Let us look briefly at the variation of tariff rates at higher levels of disaggregation.[3] Within Food and Live Animals, Canada imposes tariffs of about 25 per cent on butter and sugar, while canned meat, fresh fish, fresh fruits, coffee, and cocoa, are zero or nearly zero. Cascading is very frequently found within each group of commodities, with the raw product (say cocoa) facing negligible tariffs while the processed counterparts face far higher tariffs (9 per cent for chocolate). In Europe, the internal structure for the group is almost reversed, with butter and sugar facing no tariffs, while canned meat, fish, fruit, face tariffs of about 10 per cent. Here again strong evidence of cascading within product categories is found: tariffs on raw sugar are 1.4 per cent but on confectionary items 20 per cent; fresh vegetables 4 per cent, prepared vegetables 22 per cent. However, the considerable reliance on non-tariff barrier by the EEC to support its agricultural policy means the low nominal tariff rates on unprocessed foods underestimate the degree of nominal protection.

Beverages and Tobacco is probably the group most highly protected by tariffs, especially in the EEC where the lowest tariffs are for non-alcoholic beverages (12 per cent) with the highest for cigars, cigarettes (80 per cent). Canadian tariffs, though high compared to all other products in the categories 0-4, are lower than the EEC's at about 3 to 25 per cent respectively. Crude materials tariffs are low for both Canada and the EEC, with the few exceptions being slightly more processed goods such as synthetic and regenerated fibres (8 and 7 per cent), and cut flowers (12 per cent in the EEC). The high rate on cork in Canada (11 per cent) undoubtedly reflects protection for competing wood and plastic materials. Tariffs on fuels are especially low, with crude petroleum being a duty-free item while refined products (gasoline, materials, etc.) pay tariffs of 6 to 8 per cent, once again reflecting the cascaded structure with greater protection on more processed items.[4]

Animal and Vegetable Oils though also a raw material group in fact contains a large proportion of a semi-finished and finished goods, hence it is not surprising that the tariff rates are higher than for the previous raw materials categories, at about 8 per cent in both Canada and the EEC. Within the group,

TABLE 4-1
Comparison of Import Shares and Tariff Heights of Goods from Developing and Developed Countries, by Commodity Group, Canada and European Economic Community, 1972-75 Average

Commodity group	Canada			EEC		
	Share imported from:		Average tariff height	Share imported from:		Average tariff height
	LDC	MDC		LDC	MDC	
	(Per cent)					
0 Food and live animals	14.1	6.5	7.76	14.7	13.0	5.89
1 Beverages and tobacco	0.5	0.6	13.89	0.9	1.5	33.63
2 Crude materials	5.2	4.4	0.84	12.0	9.6	0.95
3 Fuels	59.9	2.1	0.75	55.4	5.6	1.08
4 Animals and vegetable oils	0.7	0.2	8.17	1.5	0.8	7.85
5 Chemicals	0.5	6.3	9.10	1.0	9.5	10.97
6 Manufactured goods by material	1.7	16.4	10.64	9.0	23.4	6.37
7 Machinery and transport equipment	3.4	53.5	5.01	1.5	25.7	8.34
8 Miscellaneous manufacturers	8.3	8.8	13.85	3.8	9.7	12.38
All goods	100	100	6.49	100	100	6.43

dispersion is very slight for Canada, but considerable for the EEC, varying from a low of 1 per cent for unprocessed animal oils (6 per cent in Canada, due largely to a tariff of 13.5 per cent on fish and marine oils), to a high of 10 to 18 per cent for processed oils (polymerized, hydrogenated).

Chemicals, a sector often considered as particularly protected in Europe, also has above average tariffs in both Canada and the EEC, slightly higher in the latter. At the lower end are fertilizers (zero and 5 per cent), while at the high end for Canada are explosives, perfumes and cosmetics (18 to 20 per cent), and for the EEC plastics at 15 per cent. The high weight of plastics accounts for the higher average for the EEC: the tariff in Canada on such goods is somewhat lower at 11 per cent.

Manufactured Goods by Material, includes products of leather (tariffs for the two regions of 7 and 4 per cent), rubber (14 and 8 per cent), wood (13 and 10 per cent), paper (12 and 10 per cent), textiles (20 and 12 per cent), glass, pottery and related (10 and 5 per cent), iron and steel (4 and 3 per cent), and metallic products (11 and 8 per cent), which last includes cutlery (20 and 15 per cent) and household equipment (18 and 8 per cent). In this group, EEC rates are consistently lower than Canadian ones, resulting in the overall average of 10.6 and 6.4 per cent shown; the only exception to this relation is the case of cork products with tariffs of zero and 16 per cent respectively.

For Machinery and Transport Equipment as a whole, the Canadian tariff is lower at 5.0 per cent compared with 8.3 per cent in the EEC. This is largely explained by the Canada-U.S. Automotive Agreement. If we observe actual duty payments, EEC tariffs on vehicles are 12 per cent compared to 2 per cent in Canada. However, the Canadian tariff on vehicles imported outside of the Automotive Agreement is of course far higher. Within SITC 7, there is greater internal dispersion in the Canadian rates. Several items have very low rates of zero to 2 per cent in Canada (power generating machinery, electromedical apparatus, road vehicles, ships and boats), with rates of 6 to 8 per cent in the EEC. Other items are far higher in Canada, whereas the EEC has rates only slightly above their average: electric powered machinery (12 to 14 per cent versus 6 to 12 per cent); bicycles, trailers, carriages, (17 versus 7 per cent); railway vehicles (15 versus 5 per cent).[5]

Miscellaneous Manufactures has, next to Beverages and Tobacco, the highest tariff levels in both Canada and the EEC, at 13.9 and 12.4 per cent. Dispersion is not nearly so great as most items face tariffs well above the global averages of 6.5 per cent. On the low side in Canada, we find only scientific instruments and printed matter at about 5 to 6 per cent (10 and 3 per cent in the EEC), while in the EEC only the latter plus a relatively unimportant group — developed film — have low rates. All other items range in Canada from a minimum of about 10 to 12 per cent (photographs, photographic supplies) to a high of 20 to 25 per cent and more (furniture, toys and games, clothing, footwear). For the EEC, this range is very slightly lower, from 8 to 10 per cent (plumbing and lighting fixtures, furniture, watches and clocks), to a high of 15 to 20 per cent (clothing, plastic articles, footwear).

The composition of the import baskets is characterized for both Canada and the EEC by a high

weight in primary groups of zero to 4 per cent from LDCs, and a high weight for manufactures of 5 to 8 per cent from MDCs.

Though the weight of manufactured products (which have above-average tariff rates) is apparently not high in the LDC basket, (20 per cent for Canada, 15 per cent for the EEC), this is deceptive because of the weight of crude petroleum in the total import basket. Excluding this, the percentage figures for manufactured goods from LDCs are respectively 49 and 34 per cent, compared to 87 and 72 per cent for MDCs — clearly manufactures are far from insignificant to LDCs, especially the majority without petroleum exports. This effect will have considerable impact on any bias tests, highlighting the need to do such tests carefully and with a good deal of detail. The large degree of dispersion within the major commodity groups is further cause for caution in undertaking these tests, to which we now turn.

Testing the Bias Hypothesis

Equations 3.5 and 3.6, the formulas for the tariff height of Canada and the EEC, are applied to the data described earlier with the commodity set "n" being variously defined as: all goods, all except petroleum, the Lary list, an alternative to the Lary list, goods subject to NTBs and goods not subject to NTBs. The results are shown in Table 4-2, but before discussing this, we explain the choice of subsets.

All goods are considered because the comprehensive effect of tariffs is by no means irrelevant: if there is a bias against a subset, it may be offset by the residual goods.[6] Petroleum is excluded because its tariff is zero and its weight very large.

As the use of non-tariff barriers may substitute for tariffs, it is of interest to compute the tariff height only for goods subject to NTBs, and also for those that are free of NTBs.

The Lary list defining manufactured goods of special interest to LDCs helps focus on the restrictive effect of LDC exports of manufactures, an important issue in current development strategies. We found, however, that Lary goods account for a small part of the LDC import basket (about 18 per cent for Canada, 10 per cent for the EEC) and, even more dramatically, LDCs supply a mere 5 and 8 per cent, respectively, of Canadian and EEC imports of Lary goods. To the present, Lary goods are still much more MDC goods than LDC goods! For this reason plus some conceptual qualms about the Lary list, we developed an alternative list of "special interest goods."[7] Lary's basic criterion was normative: comparative advantage as implied by unskilled labour intensity. Taking a positive criterion, we identified goods which, despite all trade barriers, showed strong performance in exports.[8] The alternative list comprises 114 items at 4-digit SITC (see Appendix Table D-3) in contrast to 206 for Lary's list (see Appendix Table D-2), but accounts for 28 and 24 per cent of the Canadian and EEC basket of LDC imports.

Considering tariff height for all goods, it is clear that bias against LDCs does not exist in Canada or the EEC. Indeed, the average tariff height facing LDCs is lower than that facing MDCs, 5.0 compared with 6.7 per cent for Canada, and 2.8 compared with 7.5 per cent for the EEC. Bias then appears to favour LDCs, not discriminate against them, especially in the EEC.[9] However, this favourable bias disappears by dropping from the list of goods crude petroleum. MDC and world values are little affected, while LDC values rise sharply to 11.44 per cent in Canada and 5.94 per cent in the EEC. Evidently, Canada's tariffs favour strongly LDCs which export crude petroleum, but are strongly

TABLE 4-2
Comparison of Tariff Heights Facing Various Types of Imports from Developing and Developed Countries, Canada and the European Economic Community, 1972-75

	Canadian imports from:			EEC imports from:		
	LDC	MDC	World	LDC	MDC	World
	(Per cent)					
All goods	5.03	6.70	6.49	2.75	7.53	6.43
All excluding petroleum	11.44	6.71	6.99	5.94	7.58	7.38
Lary list	16.88	8.54	8.96	12.01	9.95	10.11
Alternative list	15.05	15.07	15.07	8.20	10.56	10.00
NTB goods	17.30	17.31	17.31	4.62	4.48	4.50
All excluding NTB	3.81	6.28	5.98	2.54	7.99	6.71
All excluding NTB and petroleum	9.92	6.28	6.46	. .	. .	. .

biased against all others. The tariffs of the EEC also favour petroleum exporters, but non-petroleum LDCs still face a slightly favourable tariff height of 5.94 per cent compared with 7.58 per cent.

The conclusion that the average tariff height fell for LDCs from the period 1967-71 to 1972-75 is reversed when petroleum is excluded; in both cases, there is clear increase in tariff height over time, particularly so for Canada, from 8.12 to 11.44 per cent (see Appendix F). Thus the decline in the value with "all goods" came because of an increase in the weight of duty-free crude, and masked an opposite trend in all other products: an increased weight for products with above-average tariffs. Indeed, one observes this same phenomenon in almost all the pair-wise observations over time (see Appendix F). Even within the categories of goods, imports on high-tariff goods have increased faster than those of low-tariff ones, a result that counters the simple and traditional static wisdom that *ceteris paribus* "low duties (are) associated with high level of imports . . . whereas high duties that restrict imports have small weight" (Balassa, 1965, p. 574).[10] This may be saying that the tariffs are no longer restrictive enough to direct exporters into less buoyant but lower-duty items and that the restrictive effect is outweighed by the net impact of growth and competitive effects (which we analyse in Part IV). It may also imply that high tariffs remain largely on goods that are high-growth items in world trade. Lary's 1968 study showed that among such high-growth goods are those in his list; our calculation shows that tariffs on Lary goods are decidedly higher than for all goods, whether one uses LDC, MDC, or world weights, 1967-71 or 1972-75, Canadian or EEC tariffs. Although imports of Lary goods as a whole did not increase faster than the average of all world imports,[11] within the category itself it is clear that high-tariff items rose faster since the average tariff height always increased in the second period for all regions and for both Canadian and EEC tariff structures (see Appendix F). Generally comparable results are discernible for the alternative list of LDC goods, leading one to conclude that despite high tariffs (and considerable NTB restrictions) on LDC goods, many of them are growing rapidly in world trade.

Returning to the mainstream of our discussion on the extent of tariff bias, we see very strong evidence supporting those who claim Canada discriminates against the manufactures of developing countries, if we mean by such goods the Lary list, but we see no evidence of discrimination if we mean by such goods the alternative list. Thus, tariff height using the Lary list was 16.88, 8.54, and 8.96 per cent, respectively, for the LDC, MDC and world categories. Using the alternative list, the values are 15.05, 15.07, and 15.07 per cent. Indeed, for 1967-71 weights, the alternative list values suggest once again a slight bias in favour of developing countries. The evidence is inconclusive unless one of the definitions for "LDC goods" is considered to be clearly preferable; there is no reason in the present context to choose one over the other.

One may be tempted to argue that bias is shown by the mere fact that the average tariff at world weights is higher on both Lary goods (8.96 per cent) and alternative goods (15.07 per cent) than on all goods 6.49 per cent), since the first two are goods of "special interest" to LDCs. But, both these sets of goods, however special they may be to developing countries, are not so much less special (as yet) to advanced countries. Lary goods account for nearly 50 per cent of MDC imports into Canada and 35 per cent into the EEC compared to 20 and 10 per cent for developing countries. Alternative goods are somewhat more "special" to LDCs accounting for 35 per cent of their exports to Canada and 25 per cent to the EEC, compared to 11 and 18 per cent for MDC exports.[12] At most, it may be said that, for the alternative definition of LDC goods, tariff rates are distinctly higher than on all goods as a whole (about 15 compared with about 7 per cent) no matter which weights one uses. For the Lary definition of LDC goods, tariffs are substantially higher (about 17 per cent) only if the import basket of developing countries is used.

The extent of discrimination is again less for the EEC, with the Lary definition giving values for the height of the tariff walls facing imports (HM) from developing countries of 12.01, only slightly higher than for advanced countries and the world (9.95 and 10.11). In the case of the alternative definition, bias is still apparently in favour of the developing countries, with values of 8.20 compared to 10.56 and 10.00. Even if bias is viewed as a higher tariff on LDC goods compared to all goods using world weights, the degree of bias is not quite as strong as in the Canadian case. The values under both definitions of LDC goods are only slightly higher than for all goods: for Lary goods 10.11, for alternative 10.00, and for all goods 6.43.

Table 4-3 (which is calculated from the values shown in Table 4-2), summarizes the evidence on bias under various possible interpretations of the term. If we mean by bias simply that the tariff for the developing countries are higher than those facing advanced countries, then discriminating bias exists if the ratio of the tariff heights facing imports from LDCs to that facing imports from MDCs – $HM_{(LDC)}/HM_{(MDC)}$ –

is higher than one, and a favourable bias exists if it is less than one. These ratios are shown for various subsets of goods in the first column of Table 4-3. Though this is what we believe to be more reasonable concept of bias (and the one we defined at the outset in Chapter 3), one may conceivably define bias against developing countries as higher tariffs on a set of goods of "special interest" using world imports as weights. This is reflected in the second column of Table 4-3 where we used "All excluding petroleum" as a denominator, since it is more meaningful than the tariff height on all goods.

TABLE 4-3
Selected Indexes of Tariff Bias for or against Imports from Developing Countries, Canada and the European Economic Community, 1972-75

	Ratio of HM (LDC) / HM (MDC)	Ratio of HM (subset)/HM (All excluding petroleum)
Canada		
All goods	0.75	—
All excluding petroleum	1.71	1.0
Lary list	1.98	1.28
Alternative list	1.0	2.16
EEC		
All goods	0.37	—
All excluding petroleum	0.78	1.0
Lary list	1.21	1.37
Alternative list	0.78	1.36

Under the preferred definition, Canadian tariffs show a favourable bias towards developing countries for all goods, a neutral one for the alternate list, and a discriminatory bias for all goods excluding petroleum and the Lary list of goods. In the EEC, a favourable bias is evidenced in all cases except for Lary goods, which are subject to a discriminatory bias, but a lesser one than in Canada. However, on the other interpretation of bias, both Canada and the EEC appear to have a discriminatory bias against LDC goods under both definitions. Moreover, the apparently lesser bias in the EEC is no longer as clearly evident, as it is higher for Lary goods and lower for alternative goods. It would appear that some degree of bias against developing countries definitely exists in Canada, and that it may be less in the EEC, depending on how one defines "goods of special interest" to LDCs. We turn now to this comparative bias in Canada and the EEC.

Interpreting the Comparative Evidence on Canada and the EEC

One must interpret very carefully the comparative bias given the conceptual difficulty of defining what "bias" means. If import shares were the same for Canada and the EEC, our results would unequivocally imply for MDCs that the Canadian tariff structure is particularly biased against the developing countries whereas the European one is not. However, we have already observed in Table 4-1 some significant differences in the shares composing the LDC import baskets for Canada and the EEC. Hence, the assumption is not valid, and the interpretation of differences in HM must consider the possibility that these differing shares are caused by the restrictiveness of trade barriers.

If overall tariffs are approximately the same in both places (which means we must ignore the dispersion we know to be true, given the world average tariff height values for all goods excluding petrol of 6.99 for Canada and 7.38 for the EEC, as shown in Table 4-2), then a difference in the structure of the two situations is apparent. The higher average tariff level facing goods trading between the LDCs and Canada means that high individual tariffs are present on goods showing relatively heavy concentrations of exports to Canada and relatively light ones to the EEC, while low tariffs prevail on the items which the LDCs sell rather little of in the Canadian market and a good deal more of in the European common market. Unfavourable interpretations of this are, first, that Canada imposes high tariffs on goods of special interest to LDCs and, secondly, that Canadian producers are less able to compete against LDC imports than EEC producers, despite the higher Canadian tariffs on these goods. There is, however, an equally valid interpretation that is more favourable to Canada's tariffs and producers: the EEC imposes greater NTBs on LDC goods, keeping their share in the import basket lower than in Canada. This is the interpretation that is favoured by Canada's Department of Industry, Trade and Commerce, as revealed, for example, in a paper presented at a seminar on Custom Laws by an official of the Department:

> Most countries still maintain illegal restrictions whereas Canada has consistently aligned its relevant legislation and policies to conform with its international regulations. This situation is a major factor in the spillover or diversion into the Canadian market of a number of sensitive products, chiefly in the textile and apparel sector, which have had their access to other foreign markets severely restricted (Sarnia, 1975, p. 3).

The same view is (not surprisingly) held by Canadian producers as revealed by the frequent public state-

ments of such bodies as for example the Canadian Textile Institute,[13] the Canadian Wine Institute,[14] and the Ontario Vegetable Growers, whose Secretary wrote recently in a letter to the editor of the Globe and Mail:

> The reality today is that Canada is one of the most accessible countries in the world market. We have an antiquated tariff structure and minimal import quotas compared to the European Economic Community and the United States.[15]

What is the truth of the matter? When we first undertook this research topic, we addressed ourselves to the task of examining the issue of NTBs. While we did not undertake to compute quantitatively the tariff equivalent values of NTBs, we came to the conclusion, shared by other researchers on the topic, that Canada is less restrictive in its use of NTBs than other advanced countries. However, even aside from that, in the results of Table 4-2 on tariff height, we can see some evidence that is at least consistent with the "diversion" hypothesis of the Department of Industry, Trade and Commerce.

Thus, note that the tariff height with world weights on all goods excluding petroleum in Canada is only half that with LDC weights (6.99 versus 11.44) but, in the EEC, the value is actually higher (7.38 versus 5.94). This is not surprising if we observe further that LDC goods are high-tariff items whether we use the Lary or alternative definition (9 to 15 per cent in Canada, about 10 per cent in the EEC), and that the weight of these in the LDC import basket is far greater in Canada than in the EEC; about 20 versus 10 per cent, and 30 to 40 per cent versus 20 to 25 per cent, respectively, for Lary and alternative goods. Thus Canada imports ("allows in" would be the term used by the proponents of the diversion hypothesis) a far greater proportion of such high-tariff goods from developing countries than does the EEC.[18] An apparently similar pattern of greater weight of imports for high-tariff items in Canada is apparent even within the category of "LDC goods." Observe that the tariff height "for Lary goods" at MDC and world weights is higher in the EEC than in Canada: (9.95 and 10.11 in the EEC versus 8.59 and 8.96 for Canada). Clearly, the tariffs on this set of LDC goods is definitely higher in Europe and, when one calculates HM using LDC weights, the value doubles in Canada to 16.88, but only increases to 12.01 in the EEC, which must mean that the weight of the highest-tariff components is relatively greater in Canada's import basket from LDCs. A generally similar logic applies to the alternative definition.

On the other hand, three pieces of evidence mitigate the force of the "diversion argument" lending force to the first two unfavourable interpretations. First, consider the estimates of the tariff heights for NTB goods alone. On the face of it, this shows the interesting result that, in Canada, those goods also have extremely high tariffs imposed on them but that, in Europe, they face very low tariffs. This is, of course, consistent with the view that the EEC relies less upon tariffs and more upon import controls in comparison with Canada, but it confounds our interpretation of the results vis-à-vis the diversion hypothesis. For this implies, on the one hand, that, if NTB items are less restricted in Canada, there will be more of them in the basket, giving us the "high tariff: high weight" association as before. But on the other hand, the low tariffs the items face in the EEC means that a "low-tariff: low-weight" association exists there, contradicting the implications of our earlier comparisons.[17]

Secondly, though the weight of high-tariff goods (Lary, alternative, and items mentioned in note 16), is higher in Canada, evidence on the change from the first period to the second does not unequivocally corroborate the "diversion" view. Thus, the second-period shares in the LDC basket (excluding petroleum) as a ratio to the first period were, for Lary goods, 1.42 in Canada and 1.54 in the EEC; for the alternative list 1.10 and 1.08, respectively, and for the selected items listed in note 16, 1.3 and 1.7. Ratio changes alone of course do not mean diversion, for one should estimate in a more sophisticated way (using supply and demand elasticities) the impact of NTBs. Nevertheless, it is clear that the growth of such imports into Canada was by no means greater than into the EEC, a fact casting some doubt on the diversion hypothesis.

Third, as a contrary point in the diversion argument, there is the inescapable fact that Canadian tariffs are somewhat higher on most manufactured items (see Appendix Table D-1), and as can be seen for the very high tariff items of particular relevance to developing countries listed in note 16.

To conclude, Canada's tariff barriers appear to be strongly biased against LDCs, while those of the EEC are much less so. However, it is well known that, until 1975, the EEC used NTBs much more and therefore it may be that, on balance, EEC barriers to trade were as strongly biased (or even more so) than those of Canada.

TARIFF HEIGHT BY LDC REGION

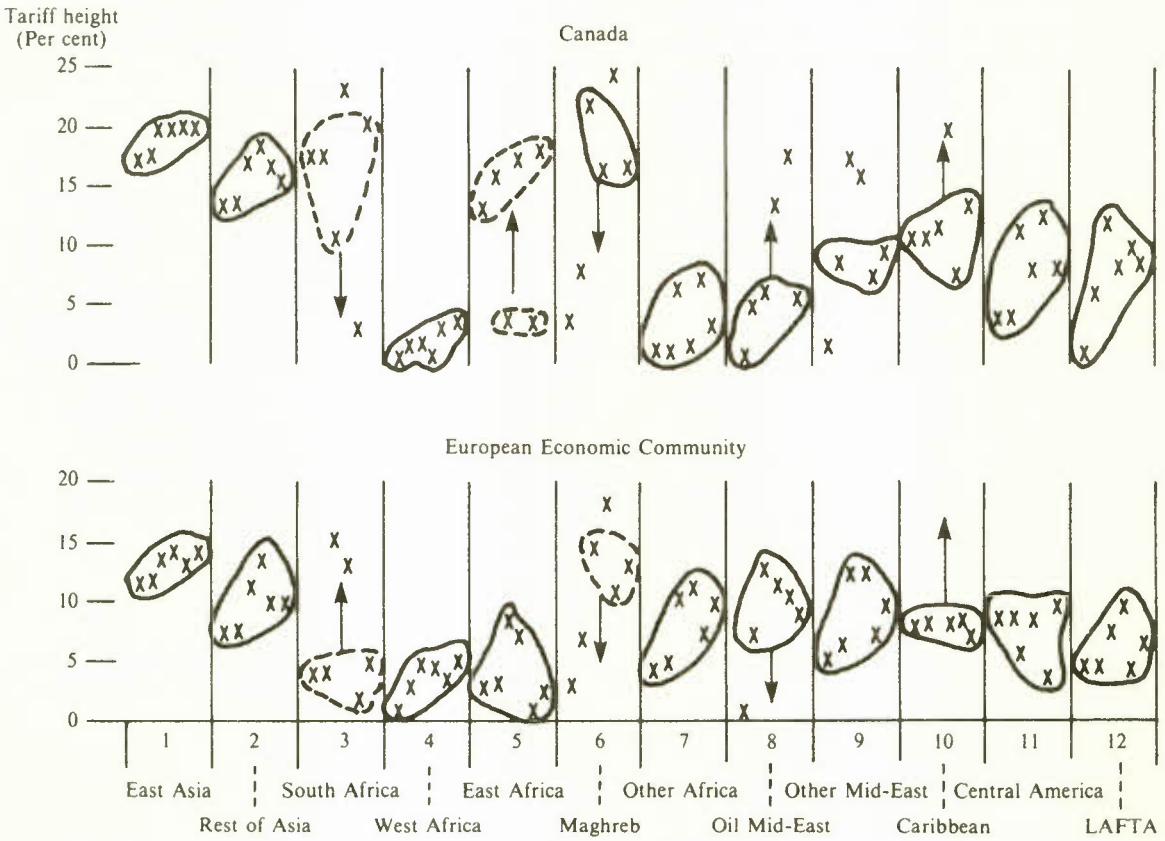
The general conclusion of a tariff bias against LDCs applies against all regions in the developing world except for regions where oil exports dominate the trade flow to Canada but some additional important regional differences are manifested. We

turn to consider these here. For the twelve regions used in our analysis, values of the tariff height in Canada and the EEC by commodity group and the subsets of goods listed in the first section of this Chapter are shown in Appendix F.

Figure 4-1 summarizes the results of tariff height calculations by region for six subsets of goods: all goods, all goods excluding petroleum, Lary goods, finished goods (stage 3), manufactured goods (SITC 5-8), and alternative list goods. For each region, these are indicated in this order from the left by x's on the two charts: one for Canada and one for the EEC. We have also circled the clustered values for each region to facilitate comparison among regions; a dashed circle was used in cases of poor clustering with an arrow pointing to outlier values and, in one case, two distinct clusters are marked by dashed lines.

The most immediate impression from the figure is the much greater dispersion of values for Canada in comparison with those for the EEC. This dispersion is manifested in three ways: as between the same measurement item from one region to another; as between general values of measurement items from region to region; and as between different measurement items within each region. The size of the range (from maximum to minimum) is invariably less for the EEC than for Canada: all goods, 11.6 to 17.0; all excluding petroleum, 9.1 to 21.1; Lary goods, 14.5 to 16.4; alternative list, 11.8 to 17.3; finished goods, 13.7 to 22.5; and manufacturers, 13.2 to 21.7. The overall average values for each region (to the extent that this is meaningful) show more dispersion in Canada. For the EEC, the highest regions are in the neighborhood of 12 to 16 per cent (regions 1, 2, and 6), the lowest are about 4 to 5 per cent (regions 3, 4, and 5), and the others (six regions) in the range of 6 to 9 per cent. For Canada, the highest are well over 15 per cent (regions 1, 2, 3, and 6), the lowest at 1 to 3 per cent (4, 7, and 8), and the remaining five regions are in a broader range of 5 to 12 per cent. Finally, dispersion within a region by type of measure is also far greater in Canada, as suggested by the tighter

FIGURE 4-1
Summary of Estimated Tariff Heights Facing Selected Categories of Imports from Twelve Developing Regions, Canada and the European Economic Community, 1972-75



clusters for each region in the EEC, and the fewer instances of outliers. What this undoubtedly reflects is the fact we have already noted several times: Canadian tariffs are much more widely dispersed than those of the EEC.

Let us consider the variation by regions more specifically. For Canadian tariffs, East Asia and the rest of Asia face the highest tariffs average rates of about 15 to 20 per cent depending on the subset of goods measured. Next come South Africa and the Maghreb but, in this case, an average for the different subsets is not as meaningful because the values are erratic, varying from highs of nearly 20 per cent for goods excluding petroleum and Lary list goods, to lows of 3 per cent for manufactures from South Africa and all goods from the Maghreb. East Africa, though somewhat lower than these two, also shows erratic values with two clear clusters: high around 15 per cent for all goods, all goods excluding petroleum, and finished goods, and low ones around 3 per cent for Lary goods, alternative ones, and manufactures. Other Middle East and the two Latin American regions, Central America and the member countries of the Latin America Free Trade Association (LAFTA), are slightly below this at around 5 to 10 per cent. Lowest values are encountered for other African countries and the oil exporters of the Middle East, with values below 5 per cent. Although, for the last, tariff height is about 17 per cent for manufactured goods alone, these comprise an extremely minimal share of that region's export to Canada.

Turning to the EEC, we observe a similar consistency of high values under all definitions of HM for the Asian regions, with East Asia again slightly higher than the rest of Asia. Also, the Maghreb is clearly next in line, though here too the tariff height measure behaves erratically according to the subset used. A slight difference is evident in South Africa, which in the EEC tariff structure is somewhat lower with erratic outliers quite high on the scale. For the other regions, tariff height in the EEC is somewhat differently dispersed than in Canada for, at the intermediate level of 8 to 10 per cent, we find values for other African countries, Middle East oil exporters, other Middle East countries, and the Caribbean. The first two of these are definitely at the lower end of the range for Canada, while the other two are also intermediate. Central America and the LAFTA are at about the same position for Canada at around 5 to 10 per cent, while the lowest two are West Africa and East Africa. Recall that for Canada West Africa too was very low, but East Africa was higher as its tariff height was over 15 per cent for certain subsets of goods.

To conclude, Canada's tariff structure is definitely more widely dispersed than that of the EEC, and the level of tariffs facing most regions of the third world is somewhat higher in Canada, with the possible exception of other African countries, and Middle East oil exporters. The major LDC exporters of manufactured goods face the strongest bias in both Canada and the EEC, though the rates are lower in the latter. These regions are Asia, South Africa, and the Maghreb with respect to Canada, and Asia and the Maghreb with respect to the EEC. Latin America and the Caribbean face international tariffs in both Canada and the EEC, while the rest of the LDCs are generally subject to much lower tariff averages.

EXPORT WEIGHTS AND BRITISH PREFERENTIAL RATES

Export Weights

In Chapter 3, we stated that the ideal weights for calculating tariff height are free trade flows, not actual import shares under existing institutional barriers. However, such weights are not available; hence, to gain some insight into the robustness of the estimates, we redo them here using export weights (HX) following equations 3.7 and 3.8.

The results shown in Table 4-4 indicate that Canadian tariffs may not be nearly as biased against LDCs as found earlier, and that EEC tariffs are not nearly so unbiased. For the 1967-71 period,[18] export weighted tariff height in Canada for all goods is 4.79, slightly lower than with import weights at 5.34; for the EEC, the export weighted value at 4.26 is higher than the import weighted one at 3.11.

The "improvement" in Canada's bias is particularly marked for the tariff height value excluding

TABLE 4-4
Tariff Heights Facing Developing Countries, Export (HX) and Import (HM) Weights, Canada and the European Economic Community, 1967-71

	Canada		EEC	
	All goods	All excluding petroleum	All goods	All excluding petroleum
	(Per cent)			
Import Weights (HM)	5.34	11.44	3.11	5.94
Export Weights (HX)	4.79	6.70	4.26	5.95

TABLE 4-5
Comparison of Tariff Heights Facing All Goods and Non-Oil Goods Exported from Developing Regions, and of Indexes of Tariff Bias for or against Them, as Received in Canada and the European Economic Community, 1967-71

	Canada			European Economic Community		
	All goods	All goods excl. petroleum	Ratio HM:HX	All goods	All goods excl. petroleum	Ratio HM:HX
	(Per cent)			(Per cent)		
East Asia	12.16	12.16	1.4	9.32	9.32	1.3
Rest of Asia	4.87	5.57	2.4	4.37	5.00	1.5
South Africa	3.61	3.61	4.8	3.30	3.30	1.2
West Africa	1.10	2.57	0.4	1.77	4.16	0.6
East Africa	4.00	4.07	3.9	3.64	3.70	0.8
Maghreb	3.34	5.40	1.5	5.69	9.20	0.8
Other Africa	3.67	3.79	0.2	4.30	4.44	1.1
Oil Mid-East	0.82	6.16	0.8	0.63	4.70	1.5
Other Mid-East	5.69	5.85	1.4	5.94	6.11	1.1
Caribbean	8.05	8.44	1.2	4.89	5.13	1.5
Central America	5.25	5.25	0.7	8.49	8.49	1.0
LAFTA	4.46	5.19	1.1	4.31	5.02	0.9

petroleum; whereas with import weights this was nearly twice as high in Canada as in the EEC (11.44 versus 5.94), with export weights it is only slightly higher (6.70 versus 5.95). Thus, using a common set of weights (LDC export composition), Canadian tariffs are no more biased against LDCs than those of the EEC.

The results at the regional level bear out the general conclusion: with export weights, Canadian tariffs facing developing countries are roughly the same as those in the EEC, and at most only marginally higher. As demonstrated in Table 4-5, for seven of the twelve regions, Canada's tariffs facing the export basket of those regions is somewhat higher than that of the EEC, and for the other five the reverse is true. Perhaps the most interesting effect of using export weights is that, in the EEC, the highest tariffs face not only East Asia (as with import weights) but equally the Maghreb and (of less importance) Central America. For Canada, the regional variation is essentially similar to that using import weights, though the dispersion is much lessened. Recall that the highest tariffs were faced by the import baskets of East Asia, the rest of Asia, South Africa, East Africa, and the Maghreb. It is precisely these regions which show the greatest decline in tariff height values upon switching to export weights, as reflected by the high values for the ratio HM:HX shown in Table 4-5. (The ratio HM:HX is calculated for values of tariff height for all goods excluding petroleum.) This effect of considerably lower tariff height for high-value regions is considerably less marked for the EEC, with the Maghreb being particularly strongly affected in the opposite manner.

Unlike our earlier comparison of the EEC and Canada with respect to bias, we have, in this set of estimates, the same weights, so that differences in the tariff averages shown reflect only differences in tariff structures and can be somewhat more easily interpreted. Nevertheless, we must still be careful in drawing implications about the bias hypothesis, for it is by no means true that the same export basket weights are appropriate to both Canada and the EEC, because a region's comparative advantage in Canada and the EEC will not necessarily be the same. Whether this matters or not depends on how narrowly one wishes to interpret bias against a region *j*; higher tariffs on the goods region *j* would export to a specific country under free trade, or higher tariffs on the goods region *j* would export to all countries under free trade? There is no clear conceptual answer to this and, in practice, the first alternative being unavailable, we cannot do otherwise than accept the latter and further state two caveats. First, one can give a different meaning to bias and, second, our actual export weights are not necessarily the same as free trade ones would be.

Having made the qualifications, we can go on to infer from the results conclusions corollary to our earlier statements on Canada concerning imports from LDCs being more heavily weighted to high-tariff items. For all goods excluding petroleum, use of export weights causes tariff height in Canada to fall considerably, but this has far less impact on the EEC values. This implies that LDC exports to Canada contain relatively more high-tariff goods than the world export basket. Thus, despite the high tariffs facing them, certain goods are moving into the

Canadian market to a much greater degree than into the European one. Without additional evidence, one cannot conclude unequivocally how much of this is attributable to NTB effects and how much to competitiveness, but even more than the earlier discussion on tariff heights using import weights, the results here are very much consistent with the "diversion" view espoused by Canada's Department of Industry, Trade and Commerce.

To end on a more cautious note, however, let us re-emphasize the qualifications that must be made and conclude by giving the empirical results their most neutral interpretation. For developing countries, the tariffs facing their general export basket (excluding petroleum) would be about equal whether this basket went to Canada or to the EEC (6.70 versus 5.95); however, the MFN tariffs payable on the actual basket to Canada are much higher than those payable on the actual basket going to the EEC, which is 11.44 per cent for Canada versus 4.94 per cent for the EEC.

Effect of British Preferential Rates

The structure of tariffs and not merely their absolute level is what matters most in the analysis of bias. Consequently, the use of MFN rates disregarding the Commonwealth preferences, though it may impart an upward bias to our estimates, will not seriously distort our picture of the structure. Nevertheless, it is of value to measure even approximately the extent of this overstatement. We have done so at the aggregate import level calculating tariff rates as the ratio of duty collected to value of imports, from a summary table in the Statistics Canada annual publication on imports.[19] The resulting values for the years 1974-75 are for LDC, MDC, and world: 3.28 (7.85 excluding petroleum), 6.54, and 6.07; compare this to values at MFN rates of 5.03 (11.44 excluding petroleum), 6.70, and 6.49. Thus the Commonwealth rates have practically no effect on the MDC and world figures, but may affect the LDC value rather significantly, as Reuber has contended. Nevertheless, even if the strength of bias is lessened, the directional results are unaffected: LDCs generally face higher tariffs than MDCs if crude petroleum is left out of consideration. Furthermore, the BP has been watered down by the wider application of the General System of Preferences (GSP), although this latter's exemption of many "special-interest" goods such as footwear and, among agricultural goods, sugar has left some power in the BP.

SUMMARY OF TESTS FOR BIAS

On the whole, one must conclude that there is some tariff bias against goods imported from LDCs in both Canada and the EEC, particularly against manufactured goods, whether it be all manufactures, or some special interest lists such as that of Lary. But the conclusion is not unequivocal for two reasons. First, using total LDC exports as measures, the bias in Canada is considerably reduced; though not in the EEC. Secondly, for one important category of goods, our alternative list of high-performance LDC goods shows no bias. In qualifying the existence of bias, however, one cannot accept the finding that the tariff walls facing all goods produced by LDCs for export are, in fact, lower than that for MDCs as evidence of favourable bias, because this result is entirely attributable to a zero tariff on crude petroleum. This "favourable" bias disappears upon exclusion of petroleum.

Bias against LDCs may be slightly higher in Canada than in the EEC, as the tariff heights faced by LDC export baskets are generally higher. However, it must be noted that non-tariff barriers have generally been higher in the EEC, mitigating the comparatively unfavourable restrictiveness of Canadian tariffs. That is, while tariffs in Canada may show a greater bias against LDCs than do tariffs in the European common market, non-tariff barriers have in the past been far more biased against LDCs in the EEC.[20] Also, use of export weights to calculate tariff heights puts Canada just about on a par with the EEC, even for tariff barriers alone.

Part III
Analysis of Trade Flows between Canada and Developing Countries

5 Market Share Analysis of Canada's Export Flows to the Developing World

The emphasis of our study concerns trade relations between Canada and the developing world. In this context, we are mainly interested in Canada's market for exports from the different regions of the developing world and especially for manufactured goods which are of main concern to the developing world as expressed in the New International Economic Order (NIEO) discussions. Of course, any lowering of Canada's trade barriers to imports from the developing world will be related to Canada's export performance in the developed and developing world. Furthermore, as shown in Chapter 2, given to the "abnormally" low trade between Canada and the LDCs, much potential for future Canadian export growth exists in the LDC market. In this spirit, we will examine Canada's performance with respect to LDCs in comparison with all OECD countries as a group. We take all OECD countries as Canada's main competitors for the markets of the developing world.

In this chapter, we use a market share model to analyse the evolution of Canada's exports to the developing world. In a market share analysis, the export performance of a given country (Canada, in our case) in a given market (the whole developing world, in our case) is compared with the export performance of its main competitors (OECD countries, in our case). In this analysis, five factors are used to account for export growth:[1]

- The "world growth effect" measures what Canada's growth in total exports would have been if it had maintained its past share in total exports from the developed world to the developing countries.

- The "commodity composition effect" measures the part of Canada's export change that is due to differences in the composition of Canada's exports from that of all exports from the developed to the developing world.

- The "market effect" measures the part of Canada's export performance that is due to the greater concentration of its exports in geographic markets that are more (or less) buoyant than the world average.

- The "price effect" measures the part of the change in current dollar exports that can be accounted for by price changes, keeping the export volume constant.

- And the "competitive effect," in essence the residual term, is a measure of the portion of export performance that is due to an improvement or deterioration in competitiveness. This could be due to factors such as lower prices over time relative to its competitors, quality improvements over time, improvements in marketing efficiency over time, and so on.

ANALYSIS OF CHANGES IN EXPORT FLOWS

In Tables 5-1 and 5-2, we present the results for the market share export model (see Appendix H). In the first table, we present the value of the different components in constant U.S. dollars at base period prices and, in the latter, the proportional (percentage) contribution of the individual effects to the total change in Canadian exports to the developing world. In these tables, we compare annual averages for the period 1971-74 with annual averages for the period 1966-70, as well as with an average of shares over both periods.

These results should be interpreted as follows: as shown in the first row of Table 5-1, the actual current dollar change in Canada's exports of raw materials to the developing world between the two periods was $336.6 million. Of this total, the $210.4 million shown as "price effect" indicates how much Canada's exports would have increased with the increases in price level alone. The $84.4 million, at base period prices under "world growth effect" indicates how much Canada's exports of raw materials to the developing world should have increased in order for Canada to keep its share of developed world exports of total raw materials to the developing world. The $15.0 million, at base period prices, shown under "market effect" indicates how much Canada's exports to LDCs should have increased for Canada to keep its share in each regional market. The positive value for this effect indicates that Canada's exports of raw mate-

TABLE 5-1
Changes in Value of Market Share of Canadian Exports to Developing Countries as Attributed to Five Factors, 1966-70 and 1971-74

	Change in exports	World growth effect	Commodity composition effect	Market effect	Competitive effect	Price effect
			(Millions of U.S. dollars)			
Weights using shares in 1966-70	(Actual prices)		(Base period prices)			(Current period prices)
Commodity effect computed first						
Group 1—Raw materials	336.62	84.42		15.01	26.81	210.36
Group 2—Semi-finished goods	280.7	194.44		-36.68	-34.02	157.04
Group 3—End products	228.30	239.87		-50.59	-82.40	121.43
Total exports	845.70	631.32	-112.57	-72.26	-89.61	488.83
Market effect computed first						
Total exports	845.70	631.32	-95.01	-89.82	-89.61	488.83
Weights using average of shares in 1966-70 and in 1971-74						
Commodity effect computed first						
Group 1—Raw materials	336.54	91.23		2.31	32.64	210.36
Group 2—Semi-finished goods	280.95	178.32		-28.10	-26.30	157.04
Group 3—End products	228.30	212.17		-36.62	-68.67	121.43
Total exports	845.80	748.12	-266.39	-62.42	-62.33	488.83
Market effect computed first						
Total exports	845.80	748.12	-250.62	-78.18	-62.33	488.83
Weights using shares in 1971-74						
Commodity effect computed first						
Group 1—Raw materials	336.46	98.03		-10.39	38.47	210.36
Group 2—Semi-finished goods	281.13	162.20		-19.52	-18.58	157.04
Group 3—End products	228.30	184.47		-22.65	-54.94	121.43
Total exports	845.91	864.92	-420.22	-52.57	-35.05	488.83
Market effect computed first						
Total exports	845.91	864.92	-406.24	-66.54	-35.05	488.83

rials have been directed to markets where exports from the developed world have grown at rates higher than average for the whole of the developing world. Finally, the $26.8 million under "competitive effect" indicates the part of the increase in Canada's exports of raw materials to the LDCs that cannot be accounted for by the previous four effects.

In the second row of Table 5-1, we see that, for the case of semi-finished products, the "world growth effect" is positive. An increase of $157.0 million can be accounted for by the "price effect." On the other hand, a loss of $36.7 million in exports to LDCs can be accounted for by the "market effect;" and a loss of $34.0 million can be attributed to the "competitive effect."

In the third row of Table 5-1, we analyse Canada's exports of finished products. Here, the "world growth effect" is positive and higher than the actual change in current dollar exports. In contrast, after accounting for a positive "price effect," the "market effect" and the "competitive effect" are both negative. Thus, Canada's exports of these types of products have been going to slow-growing markets in the developing world. Furthermore, when in these slow-growing markets, Canada has been unable to keep its 1966-70 share of total developed world exports.

In the case of Canada's total exports to LDCs, the actual change in exports is an increase of $845.7 million. This actual change can be decomposed as an increase of $488.8 million attributed to the "price effect." While $631.3 million is accounted for by the "world growth effect," a decrease of $112.6 million can be attributed to the "commodity composition effect" and a decrease of $72.3 million can be accounted for by the "market effect," and, a decrease of $89.6 million can be attributed to the residual "competitive effect."

TABLE 5-2
Proportional Changes in Market Share of Canadian Exports to Developing Countries as Attributed to Five Factors, 1966-70 and 1971-74

	Change in exports	World growth effect	Commodity composition effect	Market effect	Competitive effect	Price effect
Weights using shares in 1966-70	(Actual prices, millions of U.S. dollars)	(Per cent change of base period prices)				(Per cent change of current period prices)
Commodity effect computed first						
Group 1—Raw materials	336.62	25.08		4.46	7.97	62.49
Group 2—Semi-finished goods	280.77	69.25		-13.07	-12.12	55.93
Group 3—End products	228.30	105.07		-22.16	-36.09	53.19
Total exports	845.70	74.65	-13.31	-8.55	-10.60	57.80
Market effect computed first						
Total exports	845.70	74.65	-11.23	-10.62	-10.60	57.80
Weights using average of shares in 1966-70 and in 1971-74						
Commodity effect computed first						
Group 1—Raw materials	336.54	27.11		.69	9.70	62.49
Group 2—Semi-finished goods	280.95	63.47		-10.00	-9.36	55.93
Group 3—End products	228.30	92.93		-16.04	-30.08	53.19
Total exports	845.80	88.45	-31.50	-7.38	-7.37	57.80
Market effect computed first						
Total exports	845.80	88.45	-29.63	-9.24	-7.37	57.80
Weights using shares in 1971-74						
Commodity effect computed first						
Group 1—Raw materials	336.46	29.14		-3.09	11.43	62.49
Group 2—Semi-finished goods	281.13	57.70		-6.95	-6.61	55.93
Group 3—End products	228.30	80.80		-9.92	-24.07	53.19
Total exports	845.91	102.25	-49.68	-6.22	-4.14	57.80
Market effect computed first						
Total exports	845.91	102.25	-48.02	-7.87	-4.14	57.80

In the fifth line of this table, the constant market share decomposition is carried out with the "market effect" computed first. Comparing the fourth and fifth lines of this table, we conclude that the results are fairly insensitive to the order of the computations.

In the middle of Table 5-1, we repeat all our computations, but now we use the average of the periods of 1966-70 and 1971-74 as weights. Finally, in the lower part of the table we use, as weights, the shares for the 1971-74 period.

The three main features of the results of Table 5-1 should be noted:

- Independently of the weights chosen and the order of the computations, only the "world growth effect" and the "price effect" are always positive.
- After accounting for price changes, if Canada had been able to keep its 1966-70 share among MDC exports to the LDC world, its exports to LDCs in the 1971-74 period should have been, on an annual average, $274.4 million higher than they were. That is, Canada's exports to the LDC world have grown less than the MDC exports to the LDC world.
- Canada's exports to LDCs have been concentrated in commodities whose markets in the LDC world have grown relatively slowly. Also, Canada's exports to LDCs have been concentrated in regional markets that have experienced relatively slow growth in the period considered. Finally, the negative competitive effect reflects a failure of Canada to maintain its LDC market share in individual commodities and regions.

This negative "competitive effect" can be due to: differential rates of export price inflation between Canada and its main competitors in exports to the LDC world; differential rates of improvement in the quality of commodities and the efficiency of mark-

eting; differential access to international markets associated with the decrease of transportation and communication costs, subsidies to exports; and so on.

We conclude this chapter with three observations on the poor performance of Canadian exports to the LDCs. Canada's exports to the developing world have been concentrated in commodities whose trade from the MDCs to the LDCs has been growing at a rate lower than the average. Canada's exports to different regions in the LDC world have been concentrated in markets for which the overall trade with MDCs has been growing at a rate lower than the total trade from MDCs to LDCs. And Canada's "competitive effect" residual is positive only for raw materials. Thus, even in our trade with the third world, whose endowments of capital are far lower, Canada has not been able to increase its share of exports of highly processed manufactured foods, and we retain the characteristics historically described as being "hewers of wood and drawers of water."

6 Market Share Analysis of Canada's Import Flows from the Developing World

In this Chapter, we use a market share model to analyse the behaviour of Canada's imports by regions of the developing world as developed in Appendix H.

The model used in this part of the study is disaggregated by commodity groups, and by groups of developing countries of origin (see Appendix A). The commodity groups used are the same as those used in Chapter 2 and consist of a total of eight groups. The model is computed for two periods, the average of 1966-1970 and the average of 1971-1975. Given that a major thrust of our study is Canada's market for exports from LDCs, in this chapter, we analyse the performance of each region of the developing world (twelve such regions) in the Canadian market. For the purpose of comparison, we shall also consider the performance of the whole developing world and the developed world. The developing countries are classified into regions as indicated in Appendix A. With respect to each of these regions and categories of commodities, we shall study four factors:

- The "Canada growth effect" measures the evolution of demand potential in Canada (measured as total import levels) if every world region has maintained its share in Canada's imports in every commodity group.
- The "commodity composition effect" measures the part of the change in a world region's exports into Canada that can be accounted for by the increased matching or mismatching between a region's exported goods and Canada's varying commodity imports; it is positive if the region's exports are concentrated in commodities experiencing above-average growth in Canada's import basket and negative if the region specializes in commodities having below-average growth among Canada's imports.
- The "price effect" measures that part of Canada's increase in import values accounted for by the change in prices of the (current period) import volume.
- The "competitive effect," in essence a residual term, measures that portion of a region's export into Canada that cannot be accounted for by the other three factors.

ANALYSIS OF CHANGES IN IMPORT FLOWS

In Tables 6-1 to 6-14, we present, for fourteen regions, the results of the market share model. In each table, we compute, for three weighting schemes, a decomposition of the actual change in imports into a "Canada growth effect," a "commodity composition effect," a "price effect," and a "competitive effect." The results are expressed as a percentage of the actual change in imports of each commodity category, evaluated at 1966-70 period prices, for all fourteen tables. Let us analyse the results one region at a time. We shall start with the results for Asia Main Traders (Table 6-1). For total manufactures, using as weights the shares in the 1966-70 period, 29.0 per cent of the actual change in exports between the two periods can be allocated to the "Canada growth effect," 18.1 per cent to the "commodity composition effect," 40.2 per cent to the "price effect," and 12.7 per cent to the "competitive effect." On the other hand, for primary commodities, most of the increase can be accounted for by the "Canada growth effect" and the "price effect," with a negative "commodity composition effect" more than compensated by a positive "competitive effect." At a higher level of disaggregation, the three highest import changes between the two periods occur for group 7, Miscellaneous Manufactured Articles, group 6.1, Durable Consumer Goods, and group 5, Manufactured Materials, respectively. In the case of group 7, depending on the system of weights, over 70 per cent of the actual change can be allocated to the "Canada growth effect" and the "price effect" and over 14 per cent to Asia Main Traders' exports into Canada being more concentrated in commodities for which Canada's imports are growing faster than Canada's total imports.

In the case of capital goods, group 6.2, using 1966-70 period weights, 7.4 per cent of the increase in Canada's imports from this region can be allocated to the "Canada growth effect," 15.9 per cent to the "price effect," 9.7 per cent to the "commodity composition effect," and 67.1 per cent to the "competitive effect." This shows that most of the inroad in the Canadian market by capital goods imported from the Asia Main Traders region can be allocated to a gain

in competitiveness for this region. Even when we use the shares in the 1971-75 period as weights, the "competitive effect" is still a sizable 33.4 per cent. This increase in competitiveness may be due to factors such as: lower prices than other regions' exports to Canada; differential rates of quality improvement; differential rates of improvement in the efficiency of marketing or ability to promptly fill export orders; and so on. Finally, in the case of Manufactured Materials, most of the increase in Canada's imports can be allocated to the "price effect" and the "Canada growth effect," with a "commodity composition effect" being almost compensated by a negative "competitive effect."

For the rest of Asia (Table 6-2), increase in imports of primary commodities can be accounted for by strong "Canada growth effect" and "price effect," which, for the three weighting schemes, are even higher than the actual increase in total imports of this type of commodities, the "commodity composition effect" and the "competitive effect" being both negative. In the case of Total Manufactures, using 1966-70 period weights, the "Canada growth effect" can account for 13.6 per cent of the increase in imports, the "price effect" for a 33.2 per cent increase, the "commodity composition effect" for a 0.7 per cent increase, and the "competitive effect" for a 52.5 per cent increase. That is, in the case of the rest of Asia, most of the growth in Canada's imports of manufactures from this region cannot be accounted for by the "Canada growth effect," the "price effect," and the "commodity composition effect" and, therefore, most of the growth is attributable to the "competitive effect." At a higher level of disaggregation, the three highest increases in Canada's imports from this region between the two periods were for group 7, group 5, and group 6.2. For groups 7 and 6.2, almost the whole increase in imports is left for the residual "competitive effect." Even if we use as weights the shares in the 1971-75 period, still approximately 37 per cent of the import increase can be accounted for by the "competitive effect." For the case of group 5, most of the import increase can be accounted for by the "Canada growth effect" and the "price effect."

For the case of South Africa (Table 6-3), for primary commodities, the most important effect is the "price effect," then the "Canada growth effect."

TABLE 6-1
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from Asia Main Traders, Comparison of 1966-70 with 1971-75

	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75				
Commodity group	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Price effect	Actual change
					(Per cent)						(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	34.61	-.91	9.44	36.06	-2.01	9.09	37.51	-3.12	8.75	56.86	9,716.8
2 Industrial materials	17.10	-10.82	18.10	17.72	-13.21	19.87	18.34	-15.59	21.63	75.62	11,409.1
3 Fuels and related goods	0.00	0.00	33.10	1.30	-8.83	40.63	2.59	-17.66	48.16	66.90	8.6
Total primary commodities	25.10	-6.28	14.15	26.10	-8.09	14.95	27.10	-9.89	15.75	67.04	21,173.1
4 Chemicals	33.56	6.50	31.45	39.08	7.39	25.05	44.60	8.27	18.65	28.49	949.6
5 Manufactured materials	41.23	28.61	-15.59	42.55	20.78	-9.07	43.87	12.94	-2.55	45.75	24,493.9
6 Machinery and transport equipment	8.93	8.11	66.86	22.38	11.33	50.09	35.94	14.54	33.31	16.20	31,284.8
6.1 Durable consumer goods	8.15	1.66	57.88	22.02	2.54	43.13	35.89	3.43	28.38	32.31	666.2
6.2 Capital goods	7.40	9.69	67.06	19.74	14.17	50.24	32.09	18.64	33.42	15.85	30,337.8
7 Miscellaneous manufactured articles	32.70	18.83	1.34	35.92	16.66	.29	39.14	14.49	-.76	47.13	88,771.6
Total manufactures	29.03	18.10	12.70	34.16	16.15	9.53	39.29	14.20	6.35	40.16	145,850.8
8 Other commodities	-30.54	.62	61.69	-36.62	3.56	64.83	-42.71	6.51	67.97	68.23	1,088.4
Total imports	28.16	14.94	13.20	32.70	13.04	10.56	37.23	11.14	7.93	48.70	167,686.9

TABLE 6-2
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from Rest of Asia, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75			Price effect	Actual change
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect		
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	53.59	-44.51	18.57	50.37	-35.39	12.67	47.15	-26.26	6.76	72.35	14,602.9
2 Industrial materials	25.79	-26.04	-9.09	23.20	-24.07	-8.47	20.61	-22.11	-7.85	109.35	14,390.8
3 Fuels and related goods	-9.29	55.98	64.21	-5.09	30.54	85.44	-.88	5.10	106.66	-10.89	-9.3
Total primary commodities	39.82	-35.38	4.84	36.91	-29.80	2.16	34.00	-24.21	-.52	90.72	28,883.0
4 Chemicals	6.55	-1.08	66.64	17.64	1.94	52.53	28.74	4.97	38.42	27.88	1,313.9
5 Manufactured materials	47.54	1.46	3.46	47.68	5.62	-.83	47.81	9.77	-5.12	47.54	39,330.9
6 Machinery and transport equipment	.62	-.15	81.78	15.88	5.32	61.07	31.13	10.78	40.35	17.74	29,509.7
6.1 Durable consumer goods	.36	.11	71.18	17.02	2.16	52.47	33.68	4.20	33.77	28.35	3,342.9
6.2 Capital goods	.55	-.08	83.14	14.26	7.19	62.17	27.97	14.46	41.19	16.38	26,153.4
7 Miscellaneous manufactured articles	1.37	.71	66.06	12.16	4.47	51.51	22.96	8.22	36.96	31.86	76,177.8
Total manufactures	13.64	.72	52.46	22.48	4.92	39.42	31.32	9.13	26.38	33.18	146,048.9
8 Other commodities	-6.72	.80	71.09	-14.05	.85	78.37	-21.38	.90	85.65	34.82	1,361.6
Total imports	17.79	-5.22	44.76	24.57	-.83	33.59	31.35	3.57	22.41	42.67	177,264.2

TABLE 6-3
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from South Africa, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75			Price effect	Actual change
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect		
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	21.13	-10.30	-5.56	19.50	-9.46	-4.76	17.86	-8.61	-3.97	94.72	50,975.4
2 Industrial materials	23.60	26.96	-25.59	23.47	9.87	-8.38	23.34	-7.21	8.83	75.03	3,006.1
3 Fuels and related goods	0.00	0.00	25.60	1.09	-4.77	29.28	2.19	-9.55	32.96	74.40	14.4
Total primary commodities	21.27	-8.19	-6.68	19.72	-8.36	-4.96	18.17	-8.54	-3.24	93.60	54,050.8
4 Chemicals	14.62	3.34	53.29	23.97	1.37	45.90	33.33	-.59	38.51	28.75	1,475.9
5 Manufactured materials	49.02	1.03	-14.15	46.58	-.94	-9.74	44.14	-2.91	-5.33	64.10	8,702.4
6 Machinery and transport equipment	74.55	-11.99	-15.91	68.45	-8.79	-13.02	62.35	-5.59	-10.12	53.36	790.1
6.1 Durable consumer goods	205.25	-8.45	-190.42	160.38	-6.36	-147.64	115.51	-4.27	-104.86	93.63	73.0
6.2 Capital goods	54.65	-5.88	2.01	53.40	-3.43	.81	52.15	-.98	-.39	49.22	713.2
7 Miscellaneous manufactured articles	123.67	-63.80	-59.60	104.09	-52.46	-51.36	84.52	-41.12	-43.12	99.73	126.1
Total manufactures	47.08	-.32	-5.77	45.76	-1.77	-3.01	44.45	-3.22	-.24	59.02	10,991.0
8 Other commodities	-2.76	.19	67.06	-9.63	.25	73.86	-16.49	.32	80.66	35.51	480.1
Total imports	25.43	6.81	5.98	23.88	-7.19	-4.05	22.33	-7.58	-2.11	87.36	65,120.8

The "commodity composition effect" and the "competitive effect" are both negative. For Total Manufactures, the total increase in imports can be accounted for by the "Canada growth effect" and the "price effect." At the commodity group level, the three highest import increases were for group 1, group 5, and group 2, respectively. In the case of group 1, the increase in imports from South Africa can be entirely accounted for by the "Canada growth effect" and the "price effect." On the other hand, the "commodity composition effect" and the "competitive effect" are negative for the three weighting schemes. For group 2, again all the import increase can be accounted for by the "Canada growth effect" and the "price effect," with a positive "commodity composition effect" being compensated by a negative "competitive effect." Finally, in the case of group 5, all the increase in imports can be accounted for by the "Canada growth effect" and the "price effect" with a very small "commodity composition effect" more than compensated by a negative "competitive effect."

For West Africa (Table 6-4), in the case of primary commodities, the sum of the "Canada growth effect" and the "price effect" is higher than the actual increase in imports for all weighting schemes. On the other hand, the "commodity composition effect" is positive but it is more than compensated by a negative "competitive effect." For total manufactures, the actual change in imports between the two periods is very small, less than $2 million; therefore, we shall not comment on the decomposition of this change.

At a higher level of disaggregation, the main change in import levels is for group 3. In this case most of the increase can be accounted for by the "price effect."

For Canada's imports from East Africa and other African countries (Table 6-5), the major import changes are in groups 1 and 3. For the first group, more than the total import change can be accounted for by the "Canada growth effect" and the "price effect"; the "commodity composition effect" and the "competitive effect" are both negative. For group 3, there were no imports from that region in the 1966-70 period. Using as weights the shares in the 1971-75,

TABLE 6-4
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from West Africa, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75			Price effect	Actual change
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect		
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	742.59	-621.37	-540.64	586.50	-479.52	-526.39	430.41	-337.68	-512.14	519.41	622.9
2 Industrial materials	-44.86	44.88	137.94	-28.83	24.36	142.43	-12.80	3.83	146.92	-37.96	-3,754.3
3 Fuels and related goods	3.18	22.64	2.42	3.96	22.24	2.04	4.73	21.85	1.66	71.76	40,632.6
Total primary commodities	19.46	10.43	-19.65	16.27	14.27	-20.29	13.09	18.10	-20.94	89.75	37,305.7
4 Chemicals	0.00	0.00	96.62	16.66	-4.19	84.16	33.32	-8.39	71.69	3.38	11.8
5 Manufactured materials	16.39	-7.32	67.00	25.52	-14.10	64.65	34.65	-20.88	62.30	23.93	1,731.9
6 Machinery and transport equipment	9.68	2.48	56.62	21.80	-8.32	55.30	33.93	-19.13	53.98	31.22	10.8
6.1 Durable consumer goods	655.45	-5.33	-811.00	471.06	-3.30	-628.63	286.67	-1.28	-446.26	260.87	.2
6.2 Capital goods	0.00	0.00	73.16	13.30	-8.48	68.34	26.61	-16.97	63.52	26.84	10.6
7 Miscellaneous manufactured articles	7.32	-1.75	70.45	18.71	-2.49	59.80	30.09	-3.23	49.15	23.98	26.7
Total manufactures	16.11	-7.13	67.19	25.34	-13.83	64.65	34.57	-20.52	62.12	23.84	1,790.7
8 Other commodities	-6.30	.01	61.44	-12.76	.00	67.90	-19.23	.00	74.37	44.86	327.9
Total imports	19.09	9.55	-15.03	16.44	12.87	-15.71	13.79	16.20	-16.38	86.39	39,404.4

TABLE 6-5
Proportional Contribution of Components to Change in the Market Shares Analysis of Canadian Imports from East Africa and other African Countries, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75				
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Price effect	Actual change
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	30.19	-22.66	-4.53	27.06	-19.66	-4.41	23.94	-16.65	-4.29	97.01	42,962.7
2 Industrial materials	-32.88	89.00	78.46	-22.43	57.42	99.59	-11.98	25.84	120.71	-34.58	-1,581.9
3 Fuels and related goods	0.00	0.00	73.33	2.31	10.76	60.26	4.62	21.52	47.19	26.67	20,061.4
Total primary commodities	21.95	-18.15	18.78	20.25	-11.71	14.04	18.55	-5.27	9.30	77.42	61,350.9
4 Chemicals	5.24	-1.28	78.75	18.31	5.82	58.59	31.38	12.92	38.42	17.29	231.8
5 Manufactured materials	17.35	21.74	36.58	25.99	22.73	26.95	34.63	23.72	17.32	24.34	3,470.7
6 Machinery and transport equipment	.11	.02	79.23	16.20	-8.35	71.50	32.30	-16.72	63.77	20.65	259.3
6.1 Durable consumer goods	1.09	-.07	69.34	17.28	2.39	50.69	33.47	4.86	32.04	29.64	31.9
6.2 Capital goods	0.00	0.00	80.61	14.60	-8.40	74.41	29.20	-16.80	68.21	19.39	227.1
7 Miscellaneous manufactured articles	36.67	-7.91	20.55	38.30	-2.28	13.29	39.93	3.35	6.03	50.69	58.9
Total manufactures	15.82	18.57	41.53	25.09	19.38	31.44	34.37	20.19	21.36	24.08	3,995.1
8 Other commodities	-5.26	.14	68.19	-12.29	.29	75.07	-19.33	.45	81.95	36.93	516.1
Total imports	21.36	-15.76	20.55	20.29	-9.72	15.58	19.22	-3.67	10.61	73.85	65,880.1

TABLE 6-6
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from Maghreb, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75				
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Price effect	Actual change
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	32.77	5.18	14.68	35.48	2.30	14.85	38.19	-.58	15.02	47.37	339.5
2 Industrial materials	-30.05	-13.39	169.09	-17.68	-6.41	149.73	-5.30	.58	130.37	-25.64	-381.7
3 Fuels and related goods	0.00	0.00	31.19	.99	2.76	27.43	1.99	5.52	23.68	68.61	2,132.9
Total primary commodities	10.79	3.29	3.24	9.98	4.36	2.98	9.16	5.44	2.72	82.68	2,086.4
4 Chemicals	-65.68	34.64	131.30	-33.06	17.25	116.07	-.43	-.14	100.84	-.27	-.26.2
5 Manufactured materials	-97.98	-34.96	250.32	-61.75	-21.62	200.75	-25.51	-8.29	151.17	-17.38	-77.3
6 Machinery and transport equipment	-100.20	58.53	148.27	-58.45	27.20	137.85	-16.69	-4.13	127.43	-6.60	-1.6
6.1 Durable consumer goods	172.99	-7.13	-112.93	146.29	-5.81	-87.53	119.58	-4.50	-62.14	47.06	.2
6.2 Capital goods	-61.95	42.97	119.72	-32.61	20.13	113.21	-3.27	-2.70	106.70	-.74	-1.8
7 Miscellaneous manufactured articles	31.18	23.40	1.75	35.23	20.43	.68	39.28	17.45	-.39	43.66	254.4
Total manufactures	118.67	52.13	-155.34	100.07	43.33	-127.94	81.48	34.53	-100.55	84.54	149.4
8 Other commodities	-9.34	.19	75.98	-16.94	-.75	84.53	-24.53	-1.70	93.07	33.16	84.7
Total imports	16.90	6.28	-4.17	14.71	6.65	-2.35	12.52	7.02	-.53	80.99	2,318.1

period, 4.6 per cent of the increase can be accounted for by the "Canada growth effect," 26.7 per cent by the "price effect," 21.5 per cent by the "commodity composition effect," and 47.2 per cent by the "competitive effect."

For the Maghreb region (Table 6-6), the change in Canada's import flows are very minor. In the case of other Francophone African countries (Table 6-7), most of the increase in Canada's imports is in the primary commodities category. The highest increase is in group 2. For this group, 53.1 per cent of the increase in imports can be accounted for by the "price effect;" also a substantial part of the increase in imports can be accounted for by the "competitive effect;" this is especially so when the weights used are the import shares in the 1966-70 period. In the case of group 1, Canada's imports from these regions were concentrated on commodities whose imports increased relatively less than the average of all imports of group 1 commodities (negative "commodity composition effect"), but at the same time the positive "competitive effect" more than compensated the negative "commodity composition effect." Therefore, in the case of other Francophone African countries, most of Canada's import increases from the regions can be accounted for the the "price effect" and the "competitive effect."

For Middle East oil exporters (Table 6-8), oil accounts for 99.9 per cent of the increase in Canada's total imports between the two periods. Using as weights the shares in the 1966-70, period 0.8 per cent of the increase can be accounted for by the "Canada growth effect," 82 per cent by the "price effect," 6.0 per cent by the "commodity composition effect," and 11.1 per cent by the "competitive effect." Using as weights the import shares of the 1971-75 period, the above values are 1.9, 82.0, 8.9, and 7.2, per cent, respectively.

For other Middle East countries (Table 6-9), group 3 represents 83 per cent of the increase in Canada's imports. As contributing factors to the gain in that group, the "price effect" accounts for 78.9 per cent, the "Canada growth effect" and the "commodity composition effect" are very small, and the "competitive effect" is of medium significance at 13.7 per cent.

In the case of the Caribbean countries (Table 6-10), between the annual averages of the two periods, there was a $30.2 million increase for total primary commodity and a $7.8 million increase in total manufactures. In the case of primary commodities, the increase for group 1 was $38.9 million, the increase for group 3 $11.1 million, and a major decrease of $19.8 million for group 2.

TABLE 6-7
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from Other Francophone Africa Countries, Comparison of 1966-70 with 1971-75

	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75				
Commodity group	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Price effect	Actual change
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	23.06	-18.13	47.56	26.88	-18.05	43.65	30.71	-17.97	39.74	47.52	2,582.2
2 Industrial materials	5.13	.55	41.26	8.51	.86	37.57	11.89	1.18	33.88	53.05	8,690.7
3 Fuels and related goods	0.00	0.00	16.38	.52	1.70	14.16	1.04	3.40	11.94	83.62	4,221.0
Total primary commodities	6.72	-2.71	35.54	9.40	-2.06	32.21	12.07	-1.41	28.88	60.45	15,485.0
4 Chemicals	-57.58	17.25	140.33	-28.79	8.62	120.16	0.00	0.00	100.00	0.00	-1.0
5 Manufactured materials	153.55	170.76	-369.93	120.15	107.45	-273.23	86.74	44.15	-176.52	145.63	227.6
6 Machinery and transport equipment	1.12	-.88	61.33	12.79	-1.46	50.23	24.47	-2.04	39.13	38.44	35.8
6.1 Durable consumer goods	0.00	0.00	88.00	20.33	-.54	68.21	40.66	-1.08	48.42	12.00	.4
6.2 Capital goods	.94	-.71	61.02	11.31	-.07	50.02	21.67	.56	39.02	38.74	35.4
7 Miscellaneous manufactured articles	42.19	-1.20	18.51	45.18	-1.43	15.76	48.18	-1.67	13.00	40.49	24.6
Total manufactures	125.57	134.93	-284.12	100.74	84.74	-209.10	75.91	34.56	-134.09	123.62	289.4
8 Other commodities	-10.64	.29	70.22	-17.89	-.18	77.93	-25.13	-.65	85.65	40.13	159.0
Total imports	8.67	-.22	30.17	10.76	-.49	28.35	12.84	-.76	26.54	61.38	16,008.8

TABLE 6-8
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from Middle East Oil Exporters, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75			Price effect	Actual change
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect		
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	69.58	-17.82	-22.32	64.71	-14.64	-20.62	59.85	-11.47	-18.93	70.55	535.3
2 Industrial materials	-34.00	36.51	132.69	-19.16	20.94	133.40	-4.31	5.38	134.12	-35.19	-31.0
3 Fuels and related goods	.84	6.04	11.13	1.38	7.48	9.16	1.92	8.92	7.18	81.98	659,886.5
Total primary commodities	.90	6.02	11.10	1.43	7.46	9.13	1.97	8.90	7.15	81.98	660,741.4
4 Chemicals	-74.77	101.47	73.31	-37.39	50.73	86.65	0.00	0.00	100.00	0.00	-23.3
5 Manufactured materials	167.38	99.36	-237.54	142.37	70.77	-183.95	117.37	42.18	-130.36	70.81	119.5
6 Machinery and transport equipment	505.61	-291.51	-223.97	398.89	-237.92	-170.83	292.17	-184.33	-117.70	109.87	1.7
6.1 Durable consumer goods	-83.33	1.60	181.73	-41.66	.80	140.87	0.00	0.00	100.00	0.00	-.8
6.2 Capital goods	272.88	-151.06	-97.41	225.89	-127.89	-73.60	178.91	-104.72	-49.79	75.59	2.6
7 Miscellaneous manufactured articles	38.42	8.07	9.11	41.67	4.35	9.59	44.92	.63	10.06	44.39	34.6
Total manufactures	180.97	69.14	-227.10	151.21	52.33	-180.53	121.44	35.52	-133.96	76.99	132.1
8 Other commodities	-55.92	-2.34	50.10	-61.07	-1.87	54.78	-66.22	-1.40	59.46	108.16	45.6
Total imports	.93	6.03	11.06	1.46	7.47	9.09	1.98	8.91	7.13	81.98	662,375.0

TABLE 6-9
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from Other Middle East Countries, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75			Price effect	Actual change
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect		
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	40.85	5.38	-2.25	41.53	1.32	1.14	42.21	-2.75	4.52	56.02	2,576.9
2 Industrial materials	-43.54	38.98	143.88	-30.23	24.08	145.46	-16.91	9.18	147.04	-39.31	-659.0
3 Fuels and related goods	.03	.07	20.98	.68	3.06	17.33	1.34	6.05	13.68	78.92	69,789.9
Total primary commodities	1.90	-.10	19.02	2.44	2.80	15.58	2.98	5.71	12.13	79.18	71,819.6
4 Chemicals	23.81	8.14	41.50	32.26	1.20	39.99	40.70	-5.74	38.49	26.55	932.0
5 Manufactured materials	69.93	38.54	-54.77	66.67	25.19	-38.16	63.40	11.83	-21.54	46.30	4,537.0
6 Machinery and transport equipment	3.35	-1.37	77.34	17.68	2.97	58.67	32.01	7.31	39.99	20.69	2,024.6
6.1 Durable consumer goods	17.16	-.33	50.76	28.73	-.39	39.25	40.31	-.46	27.74	32.41	28.9
6.2 Capital goods	2.67	-.91	77.72	15.56	4.97	58.95	28.46	10.85	40.17	20.51	1,997.8
7 Miscellaneous manufactured articles	20.09	16.65	26.08	26.86	15.80	20.17	33.63	14.94	14.26	37.17	4,268.9
Total manufactures	36.76	21.33	4.89	41.09	16.06	5.83	45.42	10.79	6.78	37.01	11,651.1
8 Other commodities	-6.43	-.31	72.57	-13.79	-.73	80.35	-21.16	-1.14	88.13	34.17	413.9
Total imports	6.74	2.90	17.30	7.77	4.64	14.53	8.81	6.38	11.76	73.05	83,781.7

The increase in Canada's imports of commodities belonging to group 1 can be more than accounted for by a strong "price effect." On the other hand, the "Canada growth effect" is more than compensated by a negative "commodity composition effect" and "competitive effect." In the case of group 3, there is a very strong "price effect" of 315.2 per cent. Using weights for the 1971-75 period, the "Canada growth effect" can account for 22.9 per cent of the increase in imports, the "commodity composition effect" for a decrease of 216.3 per cent and the "competitive effect" for a decrease of 21.3 per cent. Thus, within group 3, exports from Caribbean countries into Canada have been concentrated in commodities whose market in Canada has been growing slowly.

For manufactures imported from the Caribbean, the major increase was in group 5, with an annual average increase between the two periods of $4.8 million. Using 1966-70 period weights, most of the increase in imports can be accounted for by the "price effect" and the residual "competitive effect." With 1971-75 period weights, the "Canada growth effect" also becomes important. Independent of the weighting system, the "commodity composition effect" is very small.

For Central America (Table 6-11), the major increase in Canada's imports is for group 1, with a $14.1 million increase on an annual average between both periods. The "price effect" alone can account for 95.8 per cent of this increase. On the other hand, the "Canada growth effect" can account for 86.9 per cent of the import increase. Thus the proportional contribution of the "price effect" is over 100 per cent for the three weighting systems. In contrast, the "commodity composition effect" and the "competitive effect" are both negative for every weighting system. Thus, most of the import increase from Central America can be accounted for by the growth in the Canadian market for food and related commodities in group 1.

For LAFTA countries (Table 6-12), between the two periods studied, we have the highest increase in Canada's imports from among the twelve developing regions. For primary commodities, the import increase is $543.7 million between the two periods. In contrast, for total manufactures, the increase is only $81.2 million between the two periods. Among the different commodity groups, the highest increase in imports was for group 3, which accounted for 75 per cent of the increase in Canada's total imports from this region. For this group, as expected, the "price effect" alone can account for 98.8 per cent of the import increase. There is a small positive "Canada growth effect" and a positive "commodity composition effect" almost balanced by a negative "competitive effect."

TABLE 6-10
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from Caribbean Countries, Comparison of 1966-70 with 1971-75

	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75				
Commodity group	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Price effect	Actual change
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	33.45	-14.97	-20.52	27.61	-9.93	-19.72	21.77	-4.89	-18.92	102.04	38,909.7
2 Industrial materials	-51.84	-8.32	204.57	-36.95	-5.80	187.18	-22.07	-3.29	169.78	-44.42	-19,676.8
3 Fuels and related goods	40.53	-196.45	-59.26	31.73	-206.64	-40.27	22.93	-216.83	-21.28	315.18	10,703.8
Total primary commodities	92.24	-86.03	-183.06	71.66	-84.92	-163.59	51.08	-83.81	-144.12	276.85	31,381.7
4 Chemicals	51.93	-13.27	25.58	52.12	-5.08	17.20	52.31	3.11	8.82	35.76	1,811.7
5 Manufactured materials	6.15	4.74	51.83	15.07	6.76	40.90	23.99	8.77	29.96	37.28	4,814.2
6 Machinery and transport equipment	-1323.75	148.99	1567.40	-960.40	46.01	1307.02	-597.05	-56.96	1046.65	-292.64	-20.8
6.1 Durable consumer goods	217.75	-6.57	-177.02	176.52	-4.07	-138.29	135.29	-1.57	-99.57	65.84	1.8
6.2 Capital goods	-1000.72	-59.89	1423.72	-739.91	-84.95	1187.98	-479.11	-110.01	952.24	-263.11	-22.7
7 Miscellaneous manufactured articles	27.23	9.71	19.94	31.90	10.68	14.31	36.57	11.65	8.67	43.11	1,243.2
Total manufactures	23.49	.99	36.83	28.81	4.54	27.97	34.13	8.08	19.10	38.69	7,830.6
8 Other commodities	-29.28	.67	59.37	-35.44	1.18	65.03	-41.61	1.69	70.68	69.23	835.2
Total imports	75.71	-66.55	-133.33	60.68	-64.96	-119.89	45.65	-63.37	-106.46	224.17	38,145.5

TABLE 6-11
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from Central America, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75			Price effect	Actual change
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect		
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	86.90	-26.85	-55.89	76.58	-23.00	-49.43	66.27	-19.14	-42.96	95.84	13,963.2
2 Industrial materials	14.80	-7.16	43.88	15.70	-.63	36.45	16.60	5.90	29.01	48.48	491.5
3 Fuels and related goods	-10.39	62.61	66.91	-5.80	37.18	87.74	-1.20	11.76	108.57	-19.12	-2,689.4
Total primary commodities	104.74	-45.65	-77.96	91.70	-35.17	-75.39	78.66	-24.70	-72.82	118.86	11,719.4
4 Chemicals	-83.24	-4.75	194.18	-48.26	-3.27	157.72	-13.27	-1.79	121.25	-6.19	-928.0
5 Manufactured materials	2.43	2.68	70.83	13.81	3.66	58.48	25.18	4.63	46.14	24.05	1,308.7
6 Machinery and transport equipment	109.90	-30.83	-16.91	99.22	-9.29	-27.77	88.55	12.25	-38.63	37.84	9.9
6.1 Durable consumer goods	38.94	18.48	13.71	47.42	8.50	15.21	55.91	-1.49	16.71	28.88	.4
6.2 Capital goods	94.35	-14.38	-18.19	87.33	4.02	-29.56	80.31	22.41	-40.93	38.21	9.5
7 Miscellaneous manufactured articles	6.91	-.17	53.84	15.17	4.50	40.91	23.43	9.17	27.98	39.41	448.5
Total manufactures	100.72	8.96	-75.48	84.09	11.60	-61.48	67.46	14.23	-47.49	65.80	850.6
8 Other commodities	-9.78	-.35	68.73	-16.75	-.69	76.04	-23.71	-1.03	83.35	41.40	395.3
Total imports	101.11	-40.88	-73.47	88.02	-31.22	-70.04	74.93	-21.55	-66.62	113.24	13,134.5

TABLE 6-12
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from LAFTA Countries, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75			Price effect	Actual change
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect		
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	71.34	-37.85	-15.65	64.76	-32.18	-14.74	58.18	-26.51	-13.83	82.16	40,774.3
2 Industrial materials	13.17	-8.77	40.20	15.54	-6.21	35.26	17.91	-3.64	30.33	55.41	33,248.9
3 Fuels and related goods	4.77	18.43	-22.01	4.62	15.28	-18.71	4.47	12.13	-15.41	98.82	467,927.1
Total primary commodities	10.32	12.49	-17.70	9.84	10.36	-15.09	9.36	8.23	-12.48	94.88	540,522.3
4 Chemicals	116.37	-48.10	-33.04	98.16	-28.72	-34.23	79.96	-9.33	-35.41	64.78	1,791.0
5 Manufactured materials	7.00	4.41	64.56	17.35	6.44	52.18	27.70	8.47	39.80	24.03	37,870.6
6 Machinery and transport equipment	2.75	.13	69.44	15.83	1.77	54.73	28.90	3.40	40.02	27.68	22,814.7
6.1 Durable consumer goods	.36	.00	73.11	17.05	-.21	56.63	33.74	-.43	40.16	26.53	3,003.5
6.2 Capital goods	2.61	.66	68.88	14.16	3.54	54.44	25.72	6.43	40.00	27.85	19,877.3
7 Miscellaneous manufactured articles	5.74	3.84	56.30	15.29	5.99	44.60	24.83	8.14	32.90	34.12	18,553.9
Total manufactures	7.92	1.92	61.91	18.23	4.25	49.28	28.54	6.58	36.64	28.24	81,536.2
8 Other commodities	-19.59	.91	67.06	-26.67	.83	74.21	-33.75	.76	81.36	51.62	932.8
Total imports	9.97	11.10	-7.20	10.88	9.55	-6.56	11.80	8.00	-5.93	86.13	627,990.5

The second highest increase in Canada's imports from this region is for group 1. For this group, also, the "price effect" is substantial, accounting for 82.2 per cent of the importance. The "Canada growth effect" is positive and the "commodity composition effect" and the "competitive effect" are both negative. For the overall category of primary commodities, the "price effect" is 94.9 per cent. Thus, it alone accounts for almost the whole import increase, the "commodity composition effect" is positive and the "competitive effect" is negative. This is true for the three weighting schemes. Within total manufactures, the highest increases in import levels are for groups 5, 6.2, and 7. A common feature of these three groups and also of total manufactures is the negligible contribution of the "commodity composition effect" and the high relative contribution of the "competitive effect." This is especially so when 1966-70 period weights are used. Thus, we find that an important proportion of the increase in Canada's imports of manufactures from LAFTA countries cannot be accounted for by the "price effect," the "Canada growth effect," and the "commodity composition effect" and, therefore, it is allocated to an increase in LAFTA countries' competitiveness in the Canadian market.

In Table 6-13, we present the results for the whole developing world. The increase in total primary commodities is $1,538.8 million between the two periods. In contrast, the increase for total manufactures between periods is only $408.7 million. Group 3 alone accounts for 65.2 per cent of the total increase in Canada's imports from the LDC world. For primary commodities, 90.7 per cent of the increase can be accounted for by the "price effect." The "Canada growth effect" can account for a little over 8 per cent, and an even smaller contribution can be accounted for by the "competitive effect." In contrast, the "commodity composition effect" can account for a small decrease in exports. For total manufactures, part of the import increase can be accounted for by the "Canada growth effect" and the "price effect," both being of similar magnitude. There is a small "commodity composition effect" and the "competitive effect" is positive and important. The "competitive effect" is especially high for groups 6.1 and 6.2. Thus, approximately 20 per cent of the increase in Canada's imports of manufactures from the developing world can be accounted for by the residual "competitive effect."

Finally, in Table 6-14, we present the results for the Developed and Socialist World. Most of the import increases in this case can be allocated to the "price effect" and the "Canada growth effect" with a very small "commodity composition effect" and "competitive effect."

We conclude this chapter with three observations. First, a substantial part of the increase in Canada's imports of primary commodities from the LDCs is accounted for just by price increases. This result, although dominated by fuels and related products, is also present for the group of Food, Live Animals, Beverages and Tobacco and for the group of Industrial Materials. Second, for total manufactures imported from LDCs, the "competitive effect" is as important as the "Canada growth effect" and the "price effect" in accounting for the increase in Canada's imports. The contribution of the "commodity composition effect" is very small. Third, some differences in the decomposition of the change in Canada's imports are observed when we consider different geographical areas in the developing world. Thus, we observe that, for Canada's main source of imports in the LDC world, LAFTA, a major part of the increase in Canada's import flows can be accounted for by the "competitive effect." Moreover, in the case of Asia, Canada's major source of manufactures within the LDC world, the "Canada growth effect" and the "commodity composition effect" are the most important factors that account for the increase in Canada's import from this area. Thus, most of the increase in Canada's imports from LAFTA countries can be accounted for by pure competitiveness while, in contrast, most of the increase in Canada's imports from Asia Main Traders can be accounted for by the ability of Asia's exporters in concentrating on commodities with a buoyant Canadian import market.

Thus, we find a result quite in line with our conclusion in Chapter 5 on exports. Not only have our exports of manufactures not done well in LDC markets, our domestic producers have been losing ground to highly competitive sources of manufactures in the third world. Weakening Canadian competitiveness has come about despite the continuing biases against LDCs in tariff barriers, which we have noted in Chapter 4. Recall, however, that we also found Canada's record on NTBs to be favourable towards LDCs, at least in comparison with other advanced countries. Our analysis of both trade flows and tariff barriers carries one only up to 1975, which marked the beginning of a far more restrictive NTB policy in Canada. One may speculate that the weakening position of our competitiveness, as reflected in our results, contributed to this more restrictive policy turn.

TABLE 6-13
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from Total Developing World, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75			Price effect	Actual change
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect		
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	42.72	-22.07	-11.92	38.39	-18.33	-11.33	34.07	-14.59	-10.75	91.27	218,756.4
2 Industrial materials	54.04	-19.78	-68.46	47.13	-16.81	-64.52	40.22	-13.84	-60.57	134.19	44,736.1
3 Fuels and related goods	2.49	8.98	-.50	2.73	8.86	-.62	2.97	8.73	-.75	89.04	1,280,128.8
Total primary commodities	9.72	3.72	-4.12	9.10	4.24	-4.02	8.49	4.75	-3.92	90.68	1,538,775.8
4 Chemicals	62.37	-12.25	7.20	59.45	-6.01	3.89	56.52	.22	.58	42.67	7,500.5
5 Manufactured materials	33.51	8.47	17.93	37.39	8.01	14.50	41.28	7.55	11.07	40.10	125,585.4
6 Machinery and transport equipment	5.19	2.72	71.62	18.93	6.32	54.27	32.68	9.93	36.92	20.48	86,613.0
6.1 Durable consumer goods	3.34	.13	67.50	19.07	1.03	50.87	34.81	1.93	34.24	29.03	7,131.4
6.2 Capital goods	4.52	3.79	71.99	16.91	8.80	54.57	29.31	13.82	37.16	19.71	79,865.3
7 Miscellaneous manufactured articles	17.30	9.96	33.83	24.29	10.74	26.06	31.28	11.51	18.30	38.91	188,752.2
Total manufactures	20.57	7.56	36.43	27.84	8.65	28.06	35.12	9.75	19.68	35.44	408,704.0
8 Other commodities	-15.57	.74	65.71	-22.38	1.30	71.97	-29.20	1.86	78.23	49.11	6,694.5
Total imports	11.91	4.51	4.62	12.93	5.15	2.97	13.95	5.79	1.31	78.95	1,953,199.2

TABLE 6-14
Proportional Contribution of Components to Change in the Market Shares of Canadian Imports from Developed and Socialist World, Comparison of 1966-70 with 1971-75

Commodity group	Weights using shares in 1966-70			Weights using average shares of 1966-70 and 1971-75			Weights using shares in 1971-75			Price effect	Actual change
	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect	Canada growth effect	Commodity composition effect	Competitive effect		
	(Per cent)										(Thousands of U.S. dollars)
1 Food, live animals beverages and tobacco	29.13	2.54	3.24	30.23	1.60	3.08	31.33	.67	2.91	65.09	823,324.9
2 Industrial materials	19.21	2.93	9.39	19.87	3.31	8.36	20.54	3.68	7.32	68.46	463,197.5
3 Fuels and related goods	9.71	-43.57	3.14	8.14	-42.76	3.90	6.58	-41.95	4.66	130.71	202,707.0
Total primary commodities	23.38	-3.60	5.16	23.98	-3.89	4.85	24.58	-4.17	4.53	75.06	1,491,725.5
4 Chemicals	53.16	8.91	-.08	53.19	8.85	-.04	53.22	8.78	-.01	38.01	688,923.3
5 Manufactured materials	42.41	2.53	2.38	42.16	2.85	2.31	41.91	3.17	2.24	52.68	1,791,895.6
6 Machinery and transport equipment	56.22	1.99	-.96	56.03	1.94	-.73	55.85	1.89	-.50	42.76	6,489,652.9
6.1 Durable consumer goods	57.60	1.99	-.15	57.57	1.99	-.11	57.53	1.99	-.08	40.56	3,217,149.3
6.2 Capital goods	53.56	3.27	-1.77	53.25	3.15	-1.34	52.95	3.02	-.91	44.94	3,250,743.9
7 Miscellaneous manufactured articles	54.38	-3.82	-7.09	52.92	-3.99	-5.46	51.45	-4.15	-3.84	56.53	899,033.2
Total manufactures	53.26	2.04	-.84	52.96	2.05	-.55	52.67	2.06	-.26	45.53	9,744,917.2
8 Other commodities	-161.31	8.69	-16.67	-159.52	8.49	-18.26	-157.73	8.29	-19.85	269.29	26,087.1
Total imports	48.85	1.32	-.08	48.67	1.28	.12	48.49	1.25	.33	49.92	11,344,199.1

Part IV
Analysis of Effects of Alternative Tariffs Regimes on Trade Flows

7 Existing and Potential Tariffs: Their Effect on Trade Flows

In Chapters 7 and 8, we turn to the question of tariff restrictiveness and the bias against LDCs, as defined in the second section of Chapter 3. This is done by estimating values of changes in imports as per equation (3.11):

$$\frac{\Delta M_i}{M_i} = r_i \cdot \frac{t_i}{(1+t_i)} \cdot \mu_i$$

In Chapter 7, we apply this to several possible tariff cuts such as full elimination, plus a number of attractive Tokyo Round possibilities, while Chapter 8 goes on to analyse a number of preferential schemes. Before going on to this, let us elaborate on the manner in which the elasticity values "μ_i" were obtained.

IMPORT ELASTICITY ESTIMATES

In this chapter, we test the bias hypothesis by reference to the measure of tariff depth, or the restrictive effect, as defined in Chapter 3. For the equations formulated, it is clear we require a set of values μ_i = import demand elasticity for good i. Estimates of Canadian import demand elasticities are not available at the same level of disaggregation as the data on imports and tariffs (4-digit SITC, 610 items). Indeed, published studies of elasticities available at present do not even fully cover the nine groups of the 1-digit SITC,[1] though this is less true for the U.S. where the most detailed study of import demand, Buckler and Almon (1972), provides elasticity estimates for about 50 sectors. In the work of Baldwin and Lewis (1976), which simulates the effects of tariff cuts, the Buckler and Almon estimates serve as the basis for assigning elasticity values for 310 sectors.[2]

Our approach here follows that of Baldwin and Lewis, relying upon two unpublished studies of import elasticities in Canada at about the same level of detail as Buckler and Almon. Chand, Danielson, and Smith (1976) give elasticities for 34 selected commodities, most of which are in fact products at the 2- or 3-digit SITC level; though not comprehensive, their study covers about 50 per cent of Canadian imports. A more comprehensive set of estimates is that of the Department of Industry, Trade and Commerce, computed for use in their EXPLOR Model, and detailed in Williams (1976).

Elasticities for 63 categories are given, about two-thirds estimated by the study itself, and one-third based on values from Chand, Danielson, and Smith (1976), Officer and Hurtubise (1969), and Stern (1973), among others. Though the econometric results of EXPLOR estimates are not as consistently good as those of Chand, Danielson, and Smith (1976), the coverage is more complete and this is thus a useful complement to their book.

Using the values of these two studies, we assigned elasticities to the 610 commodities of our disaggregation. A number of other estimates (Stern, 1973) were utilized to verify the reasonableness of these values, to modify them, to fill in gaps, and to arrive at slightly different values for goods that were related but not equivalent to those covered in the two studies.[3] In the final set of elasticities, we had consequently slightly over 70 values allocated among the 610 items, generally a few goods in a given group having the same or nearly the same elasticity value.

Two difficulties with such an approach bear comment: first, how accurate can such values be; and second, is it not just as well to work at a much higher level of aggregation if the disaggregated elasticities are the same? The answer to the second point being easiest, we turn to it first. Aggregation loses the information available on tariffs, which, as we have seen, are widely dispersed in Canada even within product groups. If the elasticities for a higher level group are the same for all items in the group (which was not invariably the case), and if tariffs are averaged to aggregate levels by total import weighting, then the estimate for change in imports from all regions will be almost the same at higher levels of aggregation.[4] However, it can be easily demonstrated that the effect of calculating the distribution of increments by region at aggregated levels can be quite significant. This is so because the import basket of

TABLE 7-1
Comparison of Canadian Import Elasticity Values Using Disaggregation Model and Conventional Econometric Analysis, Selected Studies, by Commodity Group

Commodity group	Corbo-Hawrylyshyn	Klein (1972)	Kreinin (1967)	Taplin (1973)	Balassa and Kreinin (1976)	Basevi (1973)	Officer and Hurtubise (1969)	Stern et al (1976)
0	1.00	.96	..	.43	..	.96	.87	.80
1	.94	.96	..	.43	..	.96	.87	.80
2	.80	.30	..	2.55	.20	.30	..	.58
3	.33	.80	..	.23	.20	.81	..	.52
4	.85	.30	..	2.55	.20	.30	..	.58
Total 0-4	.68	.75	..	.81	..	.76	..	.64
5	1.21	2.50	1.30	2.07	.82–2.06	2.50	..	2.06
6	1.70	2.50	3.40	2.07	.82–2.06	2.50	1.99	2.06
7	2.66	2.50	1.30	2.07	.82–2.06	2.50	.8–1.0	2.06
8	2.01	2.50	3.40	2.07	.82–2.06	2.50	1.99	2.06
Total 5-8	2.29	2.50	1.95	2.07	.82–2.06	2.50	1.20–1.33	2.06
All goods	1.93	2.11	..	1.79	.74–1.69	2.11	..	1.74

specific regions differs from the total import basket. Consider two items of the same elasticity, but different tariffs; if for a given region the weight of the high-tariff item is greater than its weight in the world basket, tariff aggregation using world weights and consequent estimation of the increments to the region may lead to an underestimation of the total increase in imports, though whether it does and how much depends on the weights and relative values of the two tariffs.[5]

As to the accuracy of elasticity values that have been determined in a judgmental and hence somewhat subjective way, one could plead that no other possibilities were available. But more was done; we aggregated our values using import weights to 1-digit SITC and compared these with estimates of several studies which used more conventional econometric analysis.[6] These comparisons are shown in Table 7-1; our values were the result of an iterative adjustment procedure. Thus, for example, the first "assignment" of 610 elasticities yielded an overall weighted average of 2.46, a value of 3.36 for SITC-7, and 1.86 for SITC-8. The first two seemed unduly high and the last too low compared with other estimates. After two rounds of adjustments, the final set of values were as shown, with an overall average of 1.93 compared with a range of 1.69 to 2.11 for the others.

Precise comparison by 1-digit categories is made difficult because few of the other studies in fact provide comprehensive detail at even this level, instead giving values for all manufactures in groups 5 to 8, as in Klein, or two SITC groups together, like 5 plus 7 and 6 plus 8, as in Kreinin. Where this has been done, we have repeated the value in all the relevant SITC rows, all such cases being obvious by the repetition of the same value. It is a bit more useful to compare at the level of all non-manufactured goods in groups 0 to 4 and all manufactured goods in groups 5 to 8, weighted average elasticities for which we have calculated using the world import weights of Table 4-1.

The values used in this study fall within the range for each of these groups; elasticity of non-manufactured goods ranging from .64 to .81, compared with ours at .68; for manufactures the values range from 1.33 for finished goods, given in Officer and Hurtubise, to 2.50 in the Klein study, our figure being 2.29. At the level of all goods, our value is 1.93 while the others range from 1.69 to 2.11.[7] We may further compare this overall estimate with the value for Canada of 1.94 used in the Brookings trade study, given in Cline et al. (1976, p. 9), and a value of 1.65 given in the Industry, Trade and Commerce study prepared by Williams (1976, p. 64). We conclude from such a comparison that the set of elasticity values arrived at in the fashion described is very much consistent with the best available econometric estimates done at higher levels of aggregation. This lends credence both to the values of the two underlying studies by Chand, Danielson, and Smith (1976) and Williams (1976), and to the procedure that we have adopted in the present study.

EFFECT OF ALTERNATIVE TARIFF CUTS ON GLOBAL IMPORTS

Chapter 3 argued that, while the tariff height facing LDCs is of interest to the issue of bias, the correct test can only be, in the final analysis, the amount of trade flow that is impeded by the barriers. We developed there a measure of trade restrictiveness: the first-order effects of tariff reduction assuming perfect

substitution and ignoring the effects of non-tariff barriers.[8] This must be estimated not for LDCs alone but in a global context; hence, we estimate first the total import effects as denoted by equation (3.11), and then we allocate this global increment among the 12 regions of the developing world plus the developed world. The procedure is explained fully in Appendix E; here we note briefly the main lines. As supply elasticities by region of origin are not available and extremely difficult to estimate, most estimates of tariff change effects simply assume constant shares. In our study, we hypothesize a number of alternative sharing arrangements ranging from status quo share which we consider a minimum favourable share for LDCs, to the case we regard as the absolute outer bound for LDCs; they receive the full increment of imports due to the tariff cut on LDC goods (Lary and alternative), and the status quo share on other goods. In this somewhat ad hoc fashion, we are able to approximate some benefits to LDCs via trade diversion in addition to the trade creation ones.

Thus, to answer the question, is the restrictive effect of existing tariffs on LDC imports greater than that on total imports, we simulate the impact of an across-the-board elimination of all tariffs ($r_i = 1.0$ for all i in equation 3.11) and allocate the incremental imports ΔM_i by regions as described. If the increase of imports from LDCs is greater, the bias hypothesis is confirmed. This test is reported on below as Hypothesis VII, in Tables 7-2 and 7-3. However, this is probably too narrow and unrealistic a view of the situation facing LDCs. The bias issue may be considered in the more practical framework of ongoing GATT deliberations for tariff cuts in the Tokyo Round plus the current and potential preference schemes instituted by advanced countries. The bias hypothesis is then reformulated in the following question: are the benefits accruing to developing countries from likely tariff cuts less than the benefits accruing to advanced countries? If the answer is in the affirmative, the bias hypothesis is again supported; if not, it is rejected.

The effect of preference for LDC imports is investigated in Chapter 8 while Chapter 7 is an analysis in the Tokyo Round trade negotiations context; this consequently makes it also a study of the global effects on Canada of various formulas that have been considered for tariff cutting in the Tokyo Round. Therefore, we include here a comparison of our global results with a number of such studies done for the United States, other advanced countries, and Canada.[9] Before presenting the results, we discuss briefly the various tariff cutting hypotheses applied in our analysis.

Tariff Cut Hypotheses

Canada's negotiating position in the current Tokyo Round of GATT deliberations[10] was not, of course, publicly stated, but a number of alternative scenarios were commonly discussed. A good summary of the alternative cutting formulas is given in the Brookings trade study cited in Cline et al. (1976, pp. 11, 9-13). Despite some attempts by Canada to press for the so-called sectoral approach, it appeared at the time of the research that some variant of a formula cut (wholly or partly linear), plus exceptions to be negotiated item-by-item, was the most likely outcome of the Tokyo Round negotiations; hence, we adopted the hypothesis of a 50 per cent linear cut in Canadian tariffs, with agricultural goods, textiles, and clothing being exempt.[11]

Though Canada's list of hard-core exceptions (each country being allowed this to a limit of 10 per cent of imports) is understandably a closely guarded secret, it is on the other hand clear that the agricultural and textile sectors have been in the past, and will continue to be in the future, highly protected ones, both with tariff and non-tariff barriers.[12] Therefore, we speculate that the "basic Canadian policy" would be a 50 per cent linear cut with these goods exempt and we label this Hypothesis I in Table 7-2. (Full specification is given in Appendix E.) In addition, three other non-preferential formulas are specified: Hypotheses II, III, and VII. Hypothesis II, 50 per

TABLE 7-2
Canadian Tariff Cut Hypotheses

	Label in Study	Brief Description
I	TOKYO 1	50% cut, Agricultural and Textile goods excluded
II	TOKYO 2	50% cut, Agricultural goods only excluded
III	TOKYO 3	50% cut, across the board
IV	GSP	1974 GSP, with exclusions
IVa	GSPFUL	1974 GSP, no exclusions
V	GSPP	GSP with double cut for least developed
Va	GSPPFUL	GSP, double cut and no exclusions for least developed
VI	GSP + TOKYO 1	1974 GSP on top of Tokyo 1
VII	ELIMINATE	100% cut across the board
VIII	LARPREF	100% cut for Lary goods from LDCs, only, TOKYO 1 otherwise
IX	ALTPREF	100% cut for ALT goods from LDCs only, TOKYO 1 otherwise

cent linear cut with agricultural goods exempt, is of special interest here given our focus on LDCs, as its results compared with Hypothesis I would indicate how much of any restrictive effect is attributable to textiles alone. Hypothesis III is again a 50 per cent linear cut but with no exclusion at all; this compared with I will indicate the overall effect of such exclusions and, compared with II, the effect of agricultural goods exclusion alone. Finally, Hypothesis VII simulates the full elimination of tariffs on all goods and provides the test of the bias hypothesis in its broader and less realistic sense.

Though we investigate in detail preferential tariff schemes in Chapter 8, it will be useful in this global overview to consider these here in a more general way. The Canadian Generalized System of Preferences (GSP) was implemented on July 1, 1974.[13] It came as a response to the United Nations global call for such a system as part of the NIEO and the Second Development Decade strategy; it followed by a year or two many European initiatives, such as that of the EEC in 1971, followed by action of the Scandinavian countries, Austria, Switzerland, and Japan, but it preceded the United States law of 1976. While these others allow duty-free entry of goods from developing countries, they exclude long lists of goods and/or impose ceilings on the amount permitted under GSP, with the overflow facing the usual MFN rates. Canada's GSP, on the other hand, is far less generous in the size of the preference margin (MFN rates are reduced by one-third or to the BP level, whichever is lower) but the exclusions are not as large, nor are there ceilings imposed.

The effect of the existing Canadian GSP is estimated in Hypothesis IVa, with a list of items excluded (see Schedule C in Appendix E) consisting largely of textiles and clothing other than yarns of silk and wool, fabrics of silk, wool and jute, footwear, plus electron tubes and transistors. The excluded goods accounted in 1972-75 for about 10 and 5 per cent of Canadian imports from LDCs and the world, respectively. The GSP schemes of advanced countries have been much criticized (Cooper, 1972, on the EEC, UNCTAD, 1976a, on all schemes). It is alleged that, in its present form, the GSP "can have only a limited impact on export earnings of developing countries because of the exclusion of a number of products of special export interest to them" (UNCTAD, 1976a).[14] Hypothesis IVa, in which no exclusions are applied, estimates the magnitude of this factor in Canada's GSP.

Another alleged inadequacy of the GSP concerns the likelihood of its effect, however small, being even further weakened by future tariff cuts of a multilateral non-preferential type, as the MFN formula cuts of the Tokyo Round would be. Thus, UNCTAD concludes "the benefits so far gained from the GSP stand in danger of erosion as a result of most favoured nation tariff concessions" (UNCTAD, 1976a, p. 21). The logic of this is simple: as general tariffs are lowered, the margin afforded to LDC goods by the GSP will be smaller; this applies whether the preference is on a "duty-free" basis, or the Canadian percentage cut formula. A recent article by Baldwin and Murray (1977) casts some doubt on the magnitude of the erosion; our Hypothesis VI — though not fully comparable to Baldwin and Murray's — attempts to evaluate the "erosion" effect for Canada, by simulating the impact of the GSP after an MFN cut of the Tokyo 1 type.

Recent concerns with the least developed countries have brought forth discussion on the position of the least developed countries (LLDs) in the NIEO. In this vein, consideration may be given to preferences that discriminate even among the developing countries, giving yet additional benefits to the LLD group. The Lomé convention of the EEC, (awarding special preferences beyond the GSP to a group of associated African, Carribbean, and Pacific countries) is somewhat in this spirit, though political and historical ties undoubtedly played a role. To analyse the potential effect of such a "double preferential" scheme in Canada, we formulated Hypothesis V, in which LLD regions (designated here as the rest of Asia, West Africa, East Africa, and other African countries), receive benefit from a double cut (two-thirds reduction of the MFN tariff), the other regions receiving the existing benefit. In line with the earlier test of the impact of exclusions, Hypothesis Va repeats the double cut with no exclusions for the LLDs, while other regions obtain only a one-third cut and continue to be subject to the exclusions list.

As the results below in Table 7-3 demonstrate, the GSP does indeed provide little benefit to developing countries and has only a marginal effect on Canada. This suggests that much stronger preferences might be implemented at costs to Canada that are not particularly high.[14] A hypothesis was therefore formulated that focused on the ubiquitous "special interest" goods, giving a cut of 100 per cent on the tariffs of such goods (defined as our two lists of LDC goods) coming from developing countries, and a Tokyo Round 50 per cent cut with exclusions as in Hypothesis I for other goods from LDCs and for all goods from MDCs. Hypothesis VIII does this for LDC goods defined by the Lary list, while Hypothesis IX does so for LDC goods defined by the alternative list. One may probably view this as representing an upper bound of benefits LDCs might

gain from a truly generous preferential scheme, but one that is at least within sight of political feasibility — or so we argue later.

Overview of Empirical Results

Table 7-3 shows the percentage increases in imports from developing countries, developed countries, and the world that could be expected under the various tariff cut hypotheses, assuming the market shares of imports from the LDCs remain the same. However, as a result of the tariff cuts, the share of Canadian imports coming from LDCs would likely change also, and so we have included the results for import increases that could arise according to four additional market share formulas (see Appendix E). The total increase in imports from the world is shown only once in the table, under the status quo formula, since, for a given tariff cut, this value does not change with incremental differences in the market shares of imports from LDCs.[15]

For the group of hypotheses involving the GSP (IV to Va), values are calculated only under the status quo share. Other share formulas are irrelevant in that schemes involving tariff cuts under the GSP only create trade for LDCs alone. This is not, of course, strictly defensible, for one could argue that trade diversion may occur in existing trade, but we follow the more likely assumption that any significant trade diversion would occur in incremental trade.[17] The same principle is applied in the study of Baldwin and Murray (1977) on the effects of GSP tariff cuts. As in their work, we do consider trade diversion, as reflected by the various share formulas B to E in Table 7-3, in cases where the GSP is applied together with MFN cuts. Hypothesis IV, for example, includes both and so is used as a test for "erosion." Similarly, Hypotheses VIII and IX involve multilateral cuts and preferences. Nevertheless, we calculate the import increases arising from the various share formulas under Hypotheses VI and VII only, but not for the ones containing preferential cuts, for reasons described in Chapter 8.

Is there bias against LDCs in the depth of Canadian tariffs? Not for all goods in general as the values under full elimination, Hypothesis VII, show: the increase in imports would be less for LDCs (7.1 per cent) than for MDCs (11.9 per cent), and below the global average of 11.2 per cent. This implies the restrictive effect is less against LDCs, confirming the result found on tariff height. This is even more strongly born out in the values for Tokyo Round cuts of Hypothesis I, as LDC imports grow by only 1.2 per cent compared with 5.2 and 4.7 per cent for MDCs

TABLE 7-3
Growth Rates of Canadian Imports of All Goods under Various Tariff Cut Hypotheses According to the Import Market Shares of Developing Countries in Canada

	Canadian tariff cut hypotheses										
	I	II	III	IV	IVa	V	Va	VI	VII	VIII	IX
Market share formula	TOKYO 1	TOKYO 2	TOKYO 3	GSP	GSPFUL	GSPP	GSPPFUL	GSP+ TOKYO 1	ELIMINATE	LARPREF	ALTPREF
	(Per cent)										
A Status quo-LDC	1.2	3.0	3.5	1.1	2.4	1.4	2.3	1.7	7.1	5.9	6.7
-MDC	5.2	5.8	6.0	0.0	0.0	0.0	0.0	5.2	11.9	5.1	5.1
-world	4.7	5.4	5.7	0.1	0.3	0.2	0.3	4.8	11.2	5.8	5.8
B LDC goods share up full increment											
Lary-LDC	23.3	29.2	30.0					22.9	60.1		
-MDC	1.9	1.9	2.1					1.7	4.2		
Alternative-LDC	7.1	11.9	13.0					7.6	26.0		
-MDC	4.3	4.5	4.6					2.1	9.2		
C LDC goods share up 100%											
Lary-LDC	2.2	5.5	6.1					5.3	12.2		
-MDC	5.0	5.4	5.6					2.3	11.2		
Alternative-LDC	2.1	5.4	6.3					5.1	12.6		
-MDC	5.0	5.4	5.6					2.3	11.2		
D LDC goods share up 50%											
Lary-LDC	1.7	4.4	5.0					4.0	9.9		
-MDC	5.0	5.6	5.8					2.4	11.6		
Alternative-LDC	1.7	4.3	5.1					3.9	10.3		
-MDC	5.0	5.6	5.8					2.4	11.6		
E LDC goods share up variably											
Lary-LDC	1.4	3.9	4.4					3.5	8.8		
-MDC	5.2	5.6	5.9					2.4	11.8		
Alternative-LDC	1.4	3.9	4.6					3.8	9.2		
-MDC	5.2	5.6	5.8					2.6	11.6		

and the world. This small value is largely attributable to the weight of duty-free petroleum, which accounts for 60 per cent of current LDC imports but for less than 1 per cent in the increment from tariff cuts. We return to the problem of petroleum later; first, we consider how the bias effect varies with different tariff cuts.

If 50 per cent linear cuts were to be applied on textiles also (Hypothesis II), the growth for LDCs more than doubles to 3.0 per cent, with a much smaller effect on the MDC and global imports (5.8 and 5.4 per cent), reflecting the tremendous significance to developing countries of the NIEO "campaign" to open up such markets. Though the effect of further extending Tokyo cuts to agricultural goods is smaller — because they are largely low-tariff goods compared with textiles — it is nevertheless quite large. This confirms our earlier suggestions that developing countries must not, in the rush to open markets for labour-intensive manufactures, lose sight of the continuing potential of agricultural goods in their comparative advantage basket.

One can see clearly in Hypothesis IV that the effect of the GSP scheme is quite small, but only slightly less than the potential effect of MFN cuts alone, with an import increase for LDCs of a mere 1.1 per cent compared with 1.2 per cent for the Tokyo 1 cut. A no-exclusions scheme (Hypothesis IVa) would yield an increase of 2.4 per cent compared with 3.5 per cent for a no-exclusions MFN cut (Hypothesis III). Doubling the preferences for least developed regions increases LDC growth to 1.4 per cent with exclusions, and 2.3 per cent if no exclusions are imposed on LDCs. Perhaps most telling is the fact that global impact on Canada of the GSP is absolutely miniscule, at about one-tenth to, at most, three-tenths of one per cent of our total imports. It is only if we were to implement a far more generous preference system (Hypotheses VIII and IX) that the effects would become more substantial. Though we have not shown the effect of such a scheme alone, it is clear from the values under Hypotheses VIII and IX that the impact on Canadian imports of a scheme that would truly impart large benefits to LDCs is very small. Thus if, on top of Tokyo 1 cuts, Canada allowed duty-free entry from LDCs of LDC goods, the percentage change in global imports would rise only from 4.7 to 5.8 per cent, while the growth for LDC imports would rise from 1.2 to 5.9 or 6.7 per cent, depending on one's definition of LDC goods.

Finally, on GSPs, we observe the erosion effect in Hypothesis VI; given the existing preferences, MFN cuts will mean a growth for LDCs of 1.7 per cent, only about half of a percentage point more than they already have with the GSPs alone, but also higher than the 1.2 per cent that would obtain from Tokyo 1 cuts alone. Thus, there is erosion in the sense that the gains from the GSP applied on top of presumed Tokyo Round cuts are only a fraction (about half) of the current gains with GSP applied to the existing post-Kennedy tariffs; however, this erosion is made up for more than twice over by the benefits of MFN cuts under Tokyo 1.

In the share formulas B, C, and D, we have calculated the potential effect on developing country exports if some amount of trade diversion occurred. Formula B is the one most favourable to developing countries, giving them the full increment of trade created in the goods of the Lary or alternative list. Though not a likely turn of events, this serves to delineate an upper bound for such scenarios. In such a case for the Lary list, imports into Canada from LDCs of all goods would grow by 23 to 30 per cent under the various Tokyo cuts, and by 60 per cent if tariffs were completely eliminated, compared with about 2 per cent under Tokyo cuts and 4 per cent under elimination cuts for the advanced countries. As extraordinary as this growth appears, it would only raise the share of developing countries to about 15 to 17 per cent of total imports, from the present 12 per cent. By this measure, this is not so radical or unlikely a turn of events, particularly if we recognize that the process might require several years, but this is not the place to delve into the issue of market penetration dynamics of LDC goods.

The growth for LDC imports under the alternative definition of "special interest goods" is far less dramatic, ranging respectively from 7 to 13 per cent and a maximum of 26 per cent with elimination, compared with about 4.5 and 9 per cent, respectively, for advanced countries. It is far less of a diversion, because there is less to divert: in the alternative goods, as we have noted earlier, the LDC share is already much higher than for Lary goods, at 27.3 versus 5.2 per cent.

Under share formula B, "bias" is more than compensated for through trade diversion; however, less favourable (and more likely?) share formulas do not change the "bias" picture very much from that found with status quo shares, at least not for the case of Tokyo 1. But to make the impact of tariff cuts on LDCs and MDCs about equally beneficial, we must have either a very favourable trade diversion or a less favourable one with lesser exclusions — combinations bounded by the line in Table 7.3. Under complete tariff elimination with no exclusion (Hypothesis VII) the least favourable share formula, E, does not divert enough trade to overcome the slight

bias against developing countries, but increasing by 50 per cent the share of LDC goods going to LDCs, share formula D, is nearly enough, while even more favourable diversion, as under share formulas B and C, is clearly enough to affect the bias.

We turn now to a consideration on the effects on goods of "special interest." In the Appendix G tables, one can observe the variation in the percentage change by categories, which is quite substantial, ranging from values of zero in several cases where exclusions from tariff cuts are imposed (SITC 0,1,4 in Hypothesis I and II), including very low values for goods with low tariff and/or elasticities (SITC 2,3), and reaching high values of 100 to 150 per cent under Tokyo 3 with no exclusions for imports of manufactures, Lary, and alternative goods. The values are even higher for some regions (and of course under full elimination) but we leave this aside here. In Table 7-4, we present the growth rates for imports of five key categories: all goods excluding petroleum, manufactures (SITC 5-8), the Lary list, the alternative list, and finished goods.

Values shown are only for market share formula A, the status quo; with increased shares of Lary or alternative goods going to developing countries, all these numbers are higher for LDCs and lower for MDCs (see tables in Appendix G).

The effect of excluding petroleum products is to raise considerably the percentage change in imports from LDCs to somewhat more than double the value for all goods seen in Table 7.3, which modifies considerably the conclusion that tariffs are not biased against LDCs. This latter conclusion now holds only for the case of the Tokyo 1 proposal — 50 per cent cut with agricultural goods and textiles excluded, and the same cuts plus GSP (Hypotheses I and VI). If exclusions are less severe, however, as in Hypotheses II and III, the percentage change is greater for LDCs. In as much as this is taken to be a measure of restrictiveness, one can say that, indeed, Canadian tariffs are biased against LDCs for all goods except petroleum. However, the effect of excluding petroleum is not nearly as dramatic as the effect in the tariff height test of Chapter 4. Recall that there the tariff height (excluding petroleum) facing the LDCs was 11.44 compared with 6.71 per cent for MDCs, a ratio between the two of 1.7; the comparable tariff depths for full tariff elimination are 16.9 and 11.9 per cent, respectively, for a ratio between the two of 1.4.

When tests of the bias hypothesis defined by full elimination are applied to the other four categories of goods shown in Table 7-4, the degree of bias appears even stronger. But it is still the case that, under the more likely Tokyo 1 cuts, the effect on developing country imports is a bit lower than on the combined Tokyo 1 and GSP from advanced countries. That is, the current tariff structure vis-à-vis the likely future, and still quite restrictive ones, (Hypotheses I and VI) is not biased against LDCs. However, this is a rather forced definition of bias, though not an irrelevant one for practical purposes in so far as one may wish to know how much can be gained by LDCs from some feasible liberalization.

The results for these four categories under less restrictive hypotheses however, clearly point to a bias against the LDCs. Thus, if textiles are not excluded from 50 per cent cuts (Hypothesis II), tariff depth of these four groups would jump considerably from about 3 to 6 per cent to about 9 to 15 per cent and these latter values would be less for MDCs. One exception is the alternative list, reflecting the fact that

TABLE 7-4
Growth Rates of Canadian Imports of Selected Categories of Goods from Developing and Developed Countries under Various Tariff Duty Hypotheses at Current Market Shares

	Canadian tariff cut hypotheses										
	I	II	III	IV	IVa	V	Va	VI	VII	VIII	IX
Categories of goods	TOKYO 1	TOKYO 2	TOKYO 3	GSP	GSPFUL	GSPP	GSPPFUL	GSP + TOKYO 1	ELIMINATE	LARPREF	ALTPREF
	(Per cent)										
All goods excl. petroleum — LDC	2.6	7.0	8.4	2.5	5.7	3.3	5.9	2.8	16.9	14.2	16.1
MDC	5.2	5.8	6.0	0.0	0.0	0.0	0.0	5.2	11.9	5.1	5.1
Manufactures (5 to 8) — LDC	5.6	14.7	14.7	3.2	9.8	4.3	9.0	6.1	29.4	29.0	28.0
MDC	6.0	6.7	6.7	0.0	0.0	0.0	0.0	6.0	13.4	6.0	6.0
Lary goods — LDC	5.6	15.3	15.6	3.4	10.4	4.5	9.5	6.0	31.2	31.2	29.9
MDC	6.7	7.9	8.0	0.0	0.0	0.0	0.0	6.7	16.0	6.7	6.7
Alternative goods — LDC	3.1	8.8	10.5	2.9	7.0	3.8	6.7	3.3	20.9	17.5	20.9
MDC	7.1	10.7	11.4	0.0	0.0	0.0	0.0	7.1	22.9	7.1	7.1
End goods (stage 3) LDC	4.2	11.2	13.3	3.7	8.7	4.9	8.4	4.3	26.3	22.2	25.3
MDC	6.2	6.7	6.9	0.0	0.0	0.0	0.0	6.1	13.5	6.1	6.1

textiles, though less important to advanced countries, are still of some weight in the MDC basket also. This is suggested too by the increase in MDC values for all other categories in the table as one goes from Hypothesis I to II. The effect of cutting tariffs on agricultural goods adds very little for advanced countries, but still has a significant impact for the LDC on Lary, alternative, and even finished goods. This represents the inclusion in these groups of processed food and industrial raw materials and, as already noted, underlines the need to be wary of forgetting that a lot of potential for such exports still exists in the developing world.

The GSP scheme alone (Hypothesis IV) provides nearly as much benefit as Tokyo 1 for all goods excluding petroleum, but it is less generous on various manufactured items. Its exclusion list severely restricts the flow of manufactures, Lary goods, alternative goods, and finished goods, as shown by the increases of the values from 3.2, 3.4, 2.9, and 3.7, to 9.8, 10.4, 7.0, and 8.7 per cent, respectively. These last are nearly as high as values under Tokyo 2 cuts, which means that a GSP without exclusions would provide nearly as much benefit as a Tokyo cut without exclusions. Double preferences show much the same pattern of effects, though exclusions for only the least developed mean lower overall incremental imports of these final categories. This is of course because the least developed do not currently have much of a base flow from which they may benefit; a predominant share of such goods (especially manufactures and Lary goods) come from East Asia and other regions not part of the LLD group.

Finally, we observe the effect of the "generous" preferences (Hypotheses VIII and IX). The change in imports from LDCs is considerably higher, with only a slight lowering of the values for MDCs in comparison with Tokyo 1 cuts. Recall in Table 7-3 that the global effect of imports in these two hypotheses was only slightly higher than for the complete exclusion-free Tokyo cut (Hypothesis III), the difference being only $37 million more in imports, or about one-tenth of one percent. The generous preference systems are clearly of far greater benefit to the developing countries (14 to 16 per cent increase in all goods except petroleum) at an imperceptible "cost" to Canada vis à vis the no-exclusions cut, this being achieved by trade diversion at the expense of other MDCs, but of a magnitude which for them accounts for just under 1 per cent of their exports to Canada.

Comparison With Other Tariff Cut Estimates

Although the focus of the present study is upon the trade of developing areas in Canada, the need to evaluate this in a global context results in a set of estimates that are of broader consequence to Canadian policy — namely, the implied effects on total Canadian imports of the on-going Tokyo Round negotiations. The general picture that emerges from this study is that the effect on Canadian imports will be quite small under the most likely formula for tariff cutting — an import increase of less than 5 per cent. Though this measures only the first-round increases in imports, and excludes secondary effects, it conforms generally to the conclusions of several major studies on the Tokyo Round.

Thus Baldwin concludes that "the United States can participate in a substantial tariff cutting negotiation without causing significant adverse trade and employment effects in the country" (Baldwin, 1976, p. 148). This view is confirmed by Deardorff, Stern, and Baum, who also find that, "while the effects of tariff reductions on most other (advanced) countries were, in percentage terms, substantially larger than in the U.S., they were nevertheless quite small" (Deardorff, Stern, and Baum, 1976, p. 33). Though the latter refer to net trade effects (imports minus exports), for which indeed the impact on the United States is less than for other industrial areas, the Brookings trade study finds less variation among countries in import increments and reports "virtually no serious threat of either trade balance deterioration or employment dislocation" (Cline et al., 1976. p. 38).

A closer comparison of several studies is provided by the figures in Table 7-5, though the results are not strictly comparable for several reasons. First, exclusions were not always the same; thus, for example, Cline et al. exclude textiles and petroleum, Chand, Danielson, and Smith calculate their value only for the selected commodities studied in their work, while Boadway and Treddenick apply across the board cuts only. Second, the tariff cutting formula varied in some cases; Cline uses a U.S. 60 per cent cut and a slight variation of the Canadian 50 per cent cut. Third, the models were each somewhat different.[18]

Bearing this in mind, one may nevertheless conclude that all the estimates[19] tell a very similar story for Canada: a Tokyo cut of 50 per cent with exclusions will likely result in an increase in imports of 4 to 5 per cent, slightly higher for manufactured goods. A full tariff cut with no exclusions would mean an increase of somewhat more than 10 per cent.[20] For the United States, slightly lower values are more likely, 2.5 to 4.5 per cent for a probable Tokyo cut, with an upper bound of about 7 per cent for tariff elimination.

A slight qualification — or perhaps more correctly, elaboration — of the general conclusion about the

TABLE 7-5
Selected Estimates of Growth Rates of Canadian and United States Imports from All Countries under Various Tariff Cut Proposals

	50% cut with exclusions		100% cut with exclusions: all goods
	All goods	Manufactures	
		(Per cent)	
Canada			
Corbo-Havrylyshyn	4.7	6.0	11.2
Cline et al.	5.7	..	11.2
Chand, Danielson, and Smith	4.2	..	..
Boadway and Treddenick	..	..	(10.0)
United States			
Baldwin and Lewis	2.4–3.5	3.3–4.9	..
Cline et al.	4.5–4.9	..	7.2

small impact of tariff cuts is common to all these studies. This is typified by one study: "While overall... effects... are small... this does not mean that no industry is significantly harmed or benefited" (Baldwin and Lewis, 1976, p. iii). The results (Ibid., Table 7, p. 39), show that a number of industries suffer a cut in employment well above 5 per cent: furniture and fixtures, rubber footwear, pottery, motorcycle and bicycle parts, and artificial flowers. This is by now a too-familiar list of sensitive industries and does not include textiles only because they were excluded from the Baldwin and Lewis tariff cutting exercise at the outset. Although our computations were done at the level of detail permitting investigation of industry- (or at least commodity-) specific impact, we have not analysed this issue, in view of our basic focus upon the benefits to developing countries. However, the evidence we have presented strongly suggests the same locus of sensitivity. Generally, as Appendix G tables demonstrate, commodity groups SITC 6 and 8, which contain, respectively, textiles and clothing plus many other labour-intensive items, are the groups with highest import growth rates. Also in Table 7-4, we note the high rates of increase for manufactured goods and Lary goods, and the strong effect of lifting exclusions on textiles. This last experiment, when performed by Cline et al. (1976, p. 16), raises total import creation by approximately 30 per cent, a bit higher than the effect we found of about 20 per cent — but nevertheless generally similar in its main implication: the textile sector, were it to be faced with tariff cuts of about 50 per cent, would undoubtedly be near the top of the list of "strongly affected" industries, with an induced import increase well above the small global effects of 4 to 5 per cent.

IMPACT OF TARIFF CUTS BY LDC REGION

We turn now to consider how Canadian tariff cuts affect particular regions in the developing world. Recall that the nature of the estimates is partial equilibrium in two important respects: first, changes in world trade patterns that would undoubtedly ensue from the Tokyo Round are not evaluated and, second, internal readjustments in Canada (second-order effects) are also not evaluated. The first is significant in as much as greater liberalization elsewhere would reduce the incentive to export to Canada and lesser liberalization would increase it, while the second would affect the pattern by commodity grouping and also by region through the resource re-allocation that would follow tariff cuts. However, the comparison of our results at the aggregate level with other studies that have attempted some inclusion of one or both these effects suggests that these effects would not greatly modify the magnitude of trade creation that we have estimated. Also, much of earlier empirical literature on the gains from free trade also indicates the magnitude of internal resource allocation is fairly small.[21] Therefore, we can proceed to analyse import increments by region under the constant shares assumption, as the second-order effects are unlikely to change the geographic pattern substantially.

Import Increment by Region and by Goods Category

Table 7-6 shows the percentage increase in imports to Canada for all developing countries and for each of the twelve regions therein, for all goods, primary goods, manufactures, Lary and alternative goods,

TABLE 7-6
Growth Rates in Selected Categories of Canadian Imports from Developing Countries According to Tokyo Round Tariff Cut Proposals (Hypotheses I, II, and III) at Current Market Shares, by Area of Origin

	All goods			Primary		Manufactures		Lary goods			Alternative Goods		
	I	II	III	I	III	I	II	I	II	III	I	II	III
							(Per cent)						
Developing world	1.2	3.0	3.5	0.8	0.8	5.6	14.7	5.6	15.3	15.6	3.1	8.8	10.5
East Asia	5.8	17.0	17.2	0.1	1.5	6.8	20.0	6.5	19.4	19.6	6.1	20.3	20.4
Rest of Asia	4.4	11.1	11.5	0.0	1.6	5.9	14.7	5.8	14.8	15.0	4.8	13.0	13.4
South Africa	0.4	0.4	5.4	0.0	6.3	1.8	2.0	2.3	2.9	4.8	0.1	0.1	6.3
West Africa	0.1	0.1	0.1	0.0	0.1	1.9	1.9	0.5	0.6	0.6	0.3	0.3	1.1
East Africa	0.0	0.1	3.9	0.0	4.0	0.8	2.3	0.5	2.2	2.2	0.0	0.2	5.6
Maghreb	0.9	2.9	3.2	0.3	0.5	5.7	21.7	4.8	18.9	19.4	4.0	12.9	13.0
Other Africa	0.2	0.2	0.3	0.0	0.1	3.0	3.3	2.2	2.5	2.6	0.7	0.7	1.1
Oil Mid-East	0.0	0.0	0.0	0.0	0.0	0.9	14.2	0.2	4.4	4.6	0.3	3.6	3.8
Other Mid-East	0.5	1.7	1.8	0.0	0.1	2.8	9.1	3.8	14.4	14.8	1.9	8.9	9.1
Caribbean	1.1	1.3	3.4	1.0	3.2	2.9	6.0	2.7	7.8	8.8	1.4	1.7	4.5
Central America	0.2	0.5	1.3	0.0	0.9	2.4	9.6	1.0	7.6	8.2	0.2	1.3	3.0
LAFTA	0.6	0.9	1.1	0.1	0.4	2.6	8.4	4.1	8.6	9.1	2.0	4.0	4.9

under the three multilateral Tokyo cut Hypothese I, II, and III.

It is clear that the Tokyo cut, with exclusions of textiles and agricultural goods (Hypothesis I), does not have anything like a significant impact on ten of the twelve regions; only East Asia and the rest of Asia benefit from percentage increases in their exports to Canada of large magnitude, which are 5.8 and 4.4 per cent, respectively. For primary goods only, the Caribbean feels any impact with an increase of 1 per cent largely attributable to refined petroleum products. For manufactured goods, the Lary list, and the alternative list, the picture changes somewhat, even under the restrictive Tokyo 1 cuts. Along with East Asia and the rest of Asia, the Maghreb also experiences increments of 5 per cent or more, though, as throughout, this latter region's rate is below that of Asian ones. Further, the non-oil countries of the Middle East, the Caribbean, and the LAFTA countries benefit from increments of 2 to 4 per cent under all of these three categories of "special-interest" goods. Smaller increments of 2 to 3 per cent are experienced by South Africa and other African countries (but for only two of the three categories in question — manufactures and Lary goods). West Africa, East Africa, the oil exporters of the Middle East, and Central America received almost no benefit in any category.

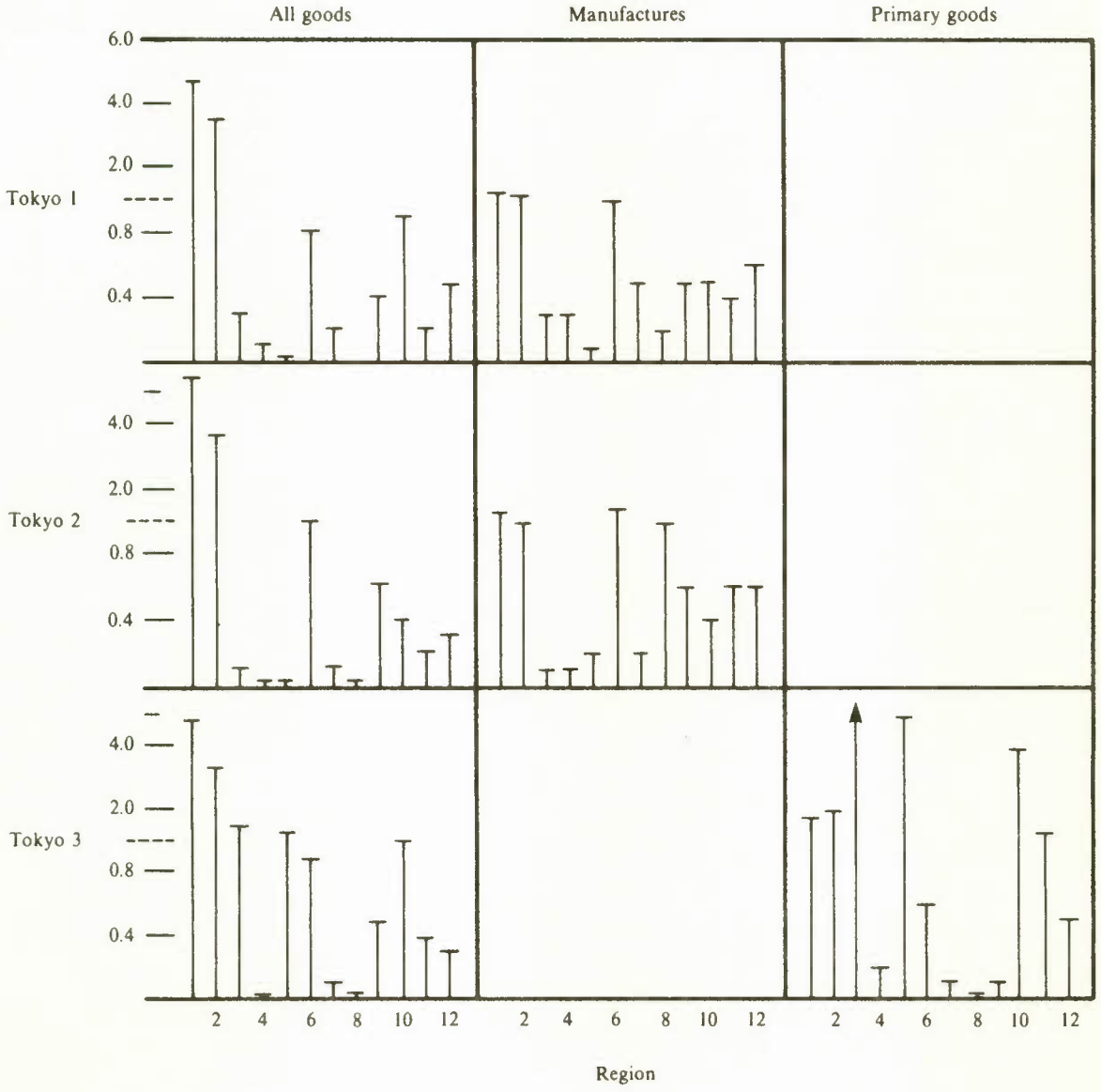
The size of the benefits increases quite considerably under the assumption that textiles are also subject to the tariff cuts (Hypothesis II) but generally only for those regions which stand out even with exclusions — that is, both Asian regions, and somewhat less so the Maghreb and other Middle East countries. For the manufactures, Lary, and alternative goods categories, this effect is strongly magnified, the above four regions experiencing rates of between 10 and 28 per cent. Some other potential sources of competition in textiles are hinted at by the very high values under Hypothesis II for the Caribbean, Central America, and LAFTA countries of about 8 to 10 per cent. The 14.2 per cent for manufactures from oil exporters of Middle East is perhaps illusory given the very low base but we should recall that this group includes countries such as Iran and Iraq, where more than oil is of significance.

Turning finally to the removal of agricultural goods from the exemption list, we observe two regions that are especially affected — South Africa and East Africa, in that order. For the former, the increase calculated for all goods jumps from a minuscule 0.4 to 5.4 per cent, well above the average for all LDCs. Calculated on the primary goods base alone, the impact is even greater — 6.3 per cent compared with an LDC average of 0.8 per cent. The effect is centred upon the importance of sugar (SITC 061), which accounts for 64 per cent of the South African exports to Canada in 1972-75 and which has a tariff of 24 per cent. For East Africa, 50 per cent tariff cuts on agricultural goods would raise its percentage increment from nearly zero under Tokyo 1 to 3.9, again slightly above average even for all goods, and well above average (4.0 versus 0.8 per cent) for the primary goods base. Sugar, too, is the explanation, but the effect is a bit smaller because sugar accounts for 50 per cent of East Africa's basket, with 15 per cent in coffee, which has a negligible tariff of about 1 per cent. Lesser improvements accrue to the Carib-

bean (sugar again, 24 per cent of its exports), and Central America (only 7 per cent in sugar). Finally, and perhaps most interesting, is the fact that the Asian regions, which benefit so much in textiles and other manufactures, obtain an above-average benefit from cuts on agricultural goods, too. This is attributable to the importance of these areas in the imports of fruit and vegetable preparations (whence the call for limitations on canned tomatoes from Asia), and certain vegetable oils such as copra and palm oil. All of these items have tariffs of about 10 per cent or more.

We can summarize the regional variation in benefits to LDCs by grouping them into four headings of beneficiaries: those who gain most even from restricted cuts; those who gain from removing textile restrictions; those benefiting from removing agricultural restrictions; and, finally, those who gain little under any circumstances. Figure 7-1 charts the values of import increases for each region as a ratio of the LDC average; for ease of presentation, the vertical scale is different above and below 1.0. No values are shown for manufactures under Tokyo 3 or for primary goods under Tokyo 1 and 2 as exemptions in

FIGURE 7-1
Growth in Canadian Imports of All Goods, Manufactures, and Primary Goods from Twelve Developing World Regions after Tokyo Round Tariff Cuts (Hypotheses I, II, and III), Relative to LDC Average, by Area of Origin



these categories bring little or no import effects. The numbers at the bottom of Figure 7-1 refer to our usual twelve regions, in the order presented in this study.

The visual evidence of Figure 7-1 is quite clear: under Tokyo 1, East Asia and the rest of Asia are the major gainers by a considerable margin, with only the Maghreb at a distant third, being at least above average for manufactures. Major beneficiaries of extending cuts to textiles are again East Asia and the rest of Asia, the Maghreb somewhat behind, and the other Middle East countries still farther behind. The beneficiaries of the agricultural cuts are primarily South Africa and East Africa, with the Caribbean and Central America also importantly affected and, surprisingly, with the two Asian regions once again above the LDC average. Finally, those regions whose total exports are little increased under all tariff cuts yet remain below the LDC average for all categories include West Africa, other African countries, oil exporters of the Middle-East, and LAFTA — though, for this last, the increments for manufactures and Lary goods are quite substantial at 8 to 10 per cent, even if they are below the average.

If an overall ranking were to be made, East Asia and the rest of Asia are clearly the major beneficiaries of any tariff cutting exercise, with the Maghreb and other Middle East countries following, the Caribbean and Central America benefiting from more liberalized cuts, South Africa and East Africa benefiting only if agricultural goods are cut, LAFTA benefiting only selectively and, finally, West Africa, other African countries and Middle East oil exporters benefiting only marginally in all cases. It is not true that all least developed countries benefit little (witness the cases of the rest of Asia and East Africa) nor is it true that those who benefit least are all least developed countries (notable exceptions are LAFTA and other Middle East countries).

Percentage Distribution of Increment by Region

The previous ranking or grouping of regions reflect the importance of Canadian tariff cuts to each region; here we consider the importance to Canada of each region as a source of the import increments, and find that the ranking changes slightly but not the dominant position of the two Asian regions. Thus in Table 7-7, we observe how the increment is shared by the twelve regions; values less than one per cent are shown as zero to minimize the visual blur of many numbers, but (+) signs note values with at least one-half of one per cent. Rounding errors result in summation by the row not adding exactly to 100.

The major sources of increased import flows under all Tokyo cut hypotheses are still East Asia and the rest of Asia, with LAFTA clearly ranking second. Thus, though the benefit to LAFTA countries of Canadian cuts is generally below the LDC average, a very large portion of the increments would nevertheless come from this region. The Maghreb and other Middle East countries are opposite to the case of LAFTA: Canadian cuts are important to them but their importance in our incremental basket is quite minuscule, particularly for the Maghreb. Under no condition does the latter account for as much as one per cent of such a basket and, for the non-oil Middle East countries, a maximum of 4 per cent of manu-

TABLE 7-7
Market Share of Developing Countries in Growth of Canadian Imports of Selected Categories of Goods under Tariff Cut Hypotheses I, II, and III, by Area of Origin

	Tokyo 1				Tokyo 2				Tokyo 3			
	0,1	2,4	5–8	0–8	0,1	2,4	5–8	0–8	0,1	2,4	5–8	0–8
	(Per cent)											
East Asia	0	34	45	42	0	34	52	49	3	12	52	43
Rest of Asia	0	26	36	33	0	26	35	34	3	69	35	29
South Africa	0	18	0	0	0	18	0	0	32	2	0	5
West Africa	0	0	0	0	0	0	0	0	0	2	0	0
East Africa	0	0	0	0	0	0	0	0	24	0	0	4
Maghreb	0	0	0	+0	0	+0	+0	+0	0	0	+0	0
Other Africa	0	0	0	0	0	0	0	0	0	+1	0	0
Oil Mid-East	0	0	0	0	0	0	0	0	0	0	0	0
Other Mid-East	0	0	4	3	0	0	1	1	+0	+0	1	1
Caribbean	0	0	0	6	0	0	1	3	23	0	1	5
Central America	0	0	0	0	0	0	0	0	2	0	0	0
LAFTA	0	22	14	15	0	22	10	11	12	13	10	11
Total, developing world	0	100	100	100	0	100	100	100	100	100	100	100

factures if textiles are excluded from cuts, but for much less if they are included.

The importance of South Africa and West Africa to Canada is similar to what Canada's tariff cuts impact are to them, which is to say only for raw materials in the case of the former and agricultural goods for both. The Caribbean, too, fits the same description: our agricultural tariff cuts affect it significantly, and it is to us a major source of such imports. The regions which were ranked as benefiting very little also turn out to have a near-zero share of the additional Canadian imports from LDCs.

In summary, our major sources of increased import flows following upon restricted tariff cuts would be primarily Asia, followed by LAFTA countries and, far behind, by the Caribbean and other Middle East countries. For imports of inedible raw materials, these last two are replaced in third position by South Africa. All other regions are insignificant. The same observation holds when textile exclusions are lifted. If agricultural goods are subject to tariff cuts also, South Africa becomes as important as the Caribbean, but both still follow far behind LAFTA which would then be even further behind Asia. A major variation in this ranking is brought about when imports of inedible raw materials are considered, in which case products from the rest of Asia are greater than the amounts coming from the other three important sources (regions 1, 3, 12); similarly, for food and live animals, East Africa looms as a close second as a supplier of these goods, next to South Africa and could account for 24 per cent of this increment.

Regional Impact of Trade Diversion Effects

Diverting trade from advanced countries to developing countries will not necessarily have an equivalent impact upon all regions, even if the shares for a given good are kept constant among the twelve regions. This is because the share parameters are applied at the most disaggregated level, and aggregation necessarily brings to bear upon the issue the relative weight of goods in the basket of each region.

One can observe this from the values in Table 7-8, which shows the percentage increase of total imports from a region under five market share formulas or variations: status quo (A), full increment of Lary goods to LDCs (B Lary), full increment of alternative goods (B Alt), and a 50 per cent increase in the LDC share of the two definitions of LDC goods (D Lary, D Alt). Values are shown for the ratio of increase for a given market share formula to that under the status quo share. This best reflects the variation effect. While the LDC average ratio according to the B Lary share is 19, that for the two Asian regions is slightly less than this, while the ratio for LAFTA, other Middle East countries, and South Africa is considerably higher. However, in all other market share formulas, only the ratio for other Middle East countries comes close to retaining this position; the two Asian regions are the only other LDC importers of any significance that come even this close to this ratio. For two other regions which have stood out in

TABLE 7-8
Growth in Canadian Imports of All Goods from Developing Countries after Tokyo 1 Tariff Cuts (Hypothesis I) under Selected Market Share Formulas, and Ratio to Growth under Status Quo, by Area of Origin

	Growth					Ratio to Status Quo			
	A	B		D		B		D	
	Status Quo	Lary	Alt	Lary	Alt	Lary	Alt	Lary	Alt
	(Per cent)								
East Asia	5.8	81.6	33.3	8.5	8.1	14	6	1.5	1.4
Rest of Asia	4.4	70.9	33.4	6.5	6.3	16	8	1.5	1.4
South Africa	0.4	23.9	0.7	0.4	0.4	59	2	1.0	1.0
West Africa	0.1	0.1	0.1	0.1	0.1	1	1	1.0	1.0
East Africa	0.0	0.4	0.3	0.1	0.1	..	..	..	..
Maghreb	0.9	6.0	2.9	1.2	1.3	7	3	1.3	1.4
Other Africa	0.2	1.2	1.1	0.2	0.2	6	6	1.0	1.0
Oil Mid-East	0.0	0.0	0.0	0.0	0.0	..	..	..	..
Other Mid-East	0.5	32.0	3.3	0.7	0.7	64	7	1.4	1.4
Caribbean	1.1	4.6	2.9	1.1	1.4	4	3	1.0	1.3
Central America	0.2	1.6	0.4	0.2	0.2	8	2	1.0	1.0
LAFTA	0.6	21.6	2.2	0.7	0.7	36	4	1.2	1.2
Total, developing world	1.2	23.3	7.1	1.7	1.7	19	6	1.4	1.4

earlier analysis, the Maghreb and the Caribbean, the extra benefits through trade diverted from developed to developing countries are always below the LDC average: their ratio values under various formulas are 7, 3, 1.3, or 1.4, and 4, 3, 1, or 1.3, respectively, compared with 19, 6, 1.4 or 1.4 for all LDCs. Indeed, they are lower than for the other African countries which appears to benefit considerably, at least in relative if not absolute terms, from the extreme diversion hypothesized market share formula B Lary or B Alt.[22]

The regional variation effects observed here are quite similar to those found for the cases of tariff cuts under hypotheses II and III, with the only difference being the order of magnitude. The benefits from cutting tariffs on textiles are considerable, and the extra benefits of trade diversion under market share formulas B Lary and B Alt are relatively smaller, Hypothesis II ratios under the B Lary share, for example; being about half that shown in Table 7-8.

To conclude, it is once again the Asian regions that stand out as major beneficiaries, with only some regions appearing interchangeably as more important under selective hypotheses.

CONCLUDING OBSERVATIONS ON BIAS IN TARIFF CUTS

In Chapter 3, we pointed out that what really matters in the bias hypothesis is how much trade flow is impeded by tariffs, and that it is consequently not enough to measure the height of tariffs, although this is, of course, part of the picture. Chapter 4 estimates of tariff height provided evidence for some degree of bias in Canada's tariff against LDCs. In this chapter, estimating the restrictive effect, we find even stronger support for the bias hypothesis, as generally the percentage of import flows that is impeded by existing tariffs is higher for LDCs. This may be masked in an analysis of the entire import basket in as much as petroleum with high weight and zero tariff (and, we may add, below-average elasticity) distorts the calculated effect. Leaving petroleum out of the analysis, the result is unequivocal: complete removal of restrictions would benefit LDCs far more than MDCs or, equivalently, the existing restrictions harm LDCs far more than MDCs.

What about the imminent further liberalization under GATT? Will it remove or reduce this bias? It will certainly not remove the bias nor, in a relative sense, is it likely to reduce it. Under the most probable scenarios for tariff cuts, the MDCs will benefit more than the LDCs. The crucial factor in this result is the exemptions list of agricultural and textile goods. If tariff cuts were applied to these goods, especially textiles, the liberalization would be of far greater benefit to the LDCs compared with the MDCs. As it stands, the trend of liberalization is a very restricted one from the view point of the developing world. Thus, the LDCs are not only harmed more by the existing tariff structure, they will probably benefit less from its future liberalization; not only are the current tariffs biased against LDCs, so, too, are the proposed changes in these tariffs.

8 Preferential Tariffs for Developing Countries

Two distinct theoretical approaches have developed in the analysis of preferential tariff reduction: models which assume goods from all sources are homogeneous (Blackhurst, 1971; U.S. Tariff Commission, 1972; Finger, 1976; Cooper, 1972; and our own) and those assuming some degree of product differentiation with elasticities of substitution (Clague, 1971a and 1971b; Baldwin and Murray, 1977; and Baldwin and Lewis 1976). The theoretical differences between the two approaches are far greater than the practical differences, however.[1] Further, the two approaches agree on the problem of import supply elasticities which might permit direct estimates of trade diversion; most studies simplify to a horizontal supply curve,[2] though some do this only for LDCs and assume finite value for MDCs (Clague assumes 6.0). Only one major work attempts to incorporate differential finite supply elasticities — the U.S. Tariff Commission, based on Blackhurst's model. Convergence of the two approaches is almost complete on empirical results: all agree the effects of GSPs are extremely minimal.

Our model is of the first type, assuming infinite supply elasticity for imports for all sources,[3] and does not attempt to estimate trade diversion via differential elasticities (though we do recognize the possibility of some trade diversion under a number of sharing hypotheses as described earlier). In any event the "preponderance of trade creation over trade diversion"[4] is a finding common to all the studies; Baldwin and Murray (1977, p. 37) find, for example, that trade diversion accounts for only 12 per cent of total expansion, which is in line with earlier findings by Kreinin on the effect of the European Common Market. Thus, if our procedure underestimates benefits to LDCs in as much as trade diversion is ignored, the magnitude of this error is unlikely to be large. It is offset by an overestimation bias in our procedure arising from three simplifications vis-à-vis the actual GSP. First, we include all LDCs whereas, in fact, some are not included; second, we include some agricultural goods that are exempted from GSP rates (this is significant for sugar); and, third, we make no attempt to evaluate the complex limiting effect of rules of origin.

EFFECT OF CANADA'S EXISTING GSP

Table 8-1 summarizes the regional effects of the various preferential schemes, showing the percentage increase in imports by region and also the dollar value of the total increment under three key formulas: I- the Tokyo cut with exclusions; IV- Canada's GSP as is; and VI- the combination of the two. Consider for the moment only the GSP hypothesis (IV). Overall, the value to LDCs is extremely small at 1.1 per cent with the impact upon Canada being almost insignificant, at one-tenth of one per cent. Regionally, the main beneficiaries are, in order of the percentage increment: East Asia, South Africa, the rest of Africa, and the Caribbean; all others are well below the LDC average. The inclusion of East Africa and the Caribbean among the top group is attributable to the same effects discussed earlier about agricultural goods, with the SITC 1 group accounting for 77 to 98 per cent of these regions' GSP increments. In contrast, manufactures (especially SITC 6 to 8) account for 90 to 96 per cent of the two Asian regions' increments despite the exemptions. In general, manufactures grow only at 3.2 per cent for all LDCs and, besides Asia, only the Maghreb and the oil producing countries of the Middle East experience higher growth of imports to Canada, though, of course, the actual volumes are minuscule.

Indeed, in terms of absolute volume, the predominance of the Asia regions is further magnified because they start from a higher base. Of the total $31.8 million increment from all LDCs, 52 per cent comes from Asia, 27 per cent from Latin America, 19 per cent from Africa and only 2 per cent from the Middle East. Note, however, that this is a smaller concentration in Asia than under the Tokyo I cuts where the share of import increase for these regions amounts to 75, 22, 1, and 1.5 per cent, respectively; the explanation lies in the exclusion of agricultural goods under the Tokyo cuts, and its inclusion (explicitly referred to in the Act of Parliament) under the GSP. How great this effect would really be in practice depends also on the applicability of NTBs but, if our results are not significantly altered by this, one may conclude that the GSP exemptions slightly

TABLE 8-1
Growth in Canadian Imports of All Goods from Developing Countries under Preferential Tariff Cut Hypotheses at Constant Market Share, by Area of Origin

	Canadian tariff cut hypothesis										
	I TOKYO I	IV GSP	VI GSP+MFN	IVa GSP FUL	V GSPP	Va GSPP FUL	VIII LARPREF	IX ALTPREF	I TOKYO I	IV GSP	VI GSP+MFN
	(Per cent)								(Millions of dollars)		
East Asia	5.8	3.6	6.8	11.4	3.7	3.6	33.7	32.8	17.056	10.763	20.238
Rest of Asia	4.0	2.6	4.3	7.6	5.2	15.2	22.1	21.8	13.311	7.883	13.249
South Africa	..	3.6	..	3.6	3.6	3.6	0.8	10.2	..	4.081	4.343
West Africa	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.050	0.056	0.085
East Africa	0.0	2.5	2.5	2.6	5.1	5.1	0.2	7.7	0.050	2.823	2.860
Maghreb	0.9	0.9	1.6	2.1	0.9	0.9	5.6	5.5	0.039	0.037	0.067
Other Africa	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.5	0.039	0.039	0.069
Oil Mid-East	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.010	0.006	0.013
Other Mid-East	0.5	0.4	0.8	1.2	0.4	0.4	3.4	3.1	0.626	0.492	1.019
Caribbean	1.1	2.1	2.8	2.2	2.1	2.1	1.6	6.5	2.080	4.111	5.493
Central America	0.2	0.7	0.7	0.9	0.7	0.6	1.0	2.2	0.091	0.354	0.404
LAFTA	0.6	0.4	0.7	0.7	0.4	0.4	1.7	2.0	6.498	5.146	8.605
Total, LDC	1.2	1.1	1.7	2.4	1.4	2.3	5.9	6.7	40.252	31.769	52.575
Total, MDC	5.2	0.0	5.1	0.0	0.0	0.0	5.1	5.1			
Total, world	4.7	0.1	4.8	0.3	0.2	0.3	5.8	5.8			
	(Millions of dollars)										
Increase—LDC	40.3	31.8	52.6	78.8	46.6	77.1	196.5	224.5			
Increase—world	1,217.5	31.8	1,234.1	78.8	46.6	77.1	1,513.8	1,520.4			
	(Per cent)										
LDC share	3.3	100.0	4.6	100.0	100.0	100.0	13.0	14.8			

favour Africa (or agricultural producers, more correctly) relative to other areas, and especially relative to Asia. This differs somewhat from the effects of the United States' GSP under which, according to Baldwin and Murray (1977, p. 38), Asia captures 61 per cent of the increment, Africa only 0.5 per cent and Latin America 31 per cent — more like our own values under MFN cuts.

The combined effect of MFN cuts and the preference scheme leads to a fairly small increase in the LDC average increment (from $35.9 million or 1.1 per cent to 56.9 million or 1.7 per cent) but an important regional variation is evident, for the predominance of Asia reasserts itself. Only these two regions lie well above the average percentage increment (8.6 and 5.9 per cent, respectively) while of the three others that were above average under GSP alone, just the Caribbean remains but barely so at 1.8 per cent. The Asian share in the increment is approximately the same as with MFN cuts alone at about 68 per cent though Africa's share at 7 per cent remains higher than with MFN cuts only.

We turn now to the issue of erosion. As noted in Chapter 7, MFN cuts do reduce GSP gains to about half the pre-Tokyo magnitudes. Let us define erosion by region (R) as the amount of incremental imports under GSP alone (M^i_{IV}), less the apparent GSP component in the combined GSP + MFN simulations. As this latter is given by M^i under VI less M^i under I, we have:

$$R^i = M^i_{IV} - (M^i_{VI} - M^i_I) \qquad (8.1)$$

Values for this and their ratio to the GSP benefit under IV, which we label the "erosion effect," are given in Table 8-2, columns 1 and 2. Here we see more clearly the result found in Chapter 7: MFN cuts of 50 per cent would erode away slightly over half of the current GSP benefits accruing to LDCs. On the other hand, not only is the erosion partial, there is a compensating benefit from the MFN cuts, whose extent is shown by the ratio of benefits under Tokyo (M^i_I) to the amount of erosion (R^i), as shown in column 3. The amount of the benefit from MFN cuts alone not only recoups the loss of GSP gains through erosion but, on average for LDCs, it exceeds the erosion about once over. That is to say, when all is said and done, after MFN cuts are imposed upon the current GSP, LDC import increments would be two-thirds again as large as they are with the GSP alone. This is shown by the values in column 4, giving the value of the benefit from MFN and GSP cuts (Hypothesis VI) to the benefits from GSP alone (Hypothesis IV).

Baldwin and Murray (1977) also conclude erosion is even smaller, finding benefits of MFN cuts "amount to some four times the loss of GSP advantages,"[5]

TABLE 8-2
Amount of GSP Erosion from MFN Tariff Cuts on Canadian Imports from Developing Countries, by Area of Origin

	Erosion		Compensation	Net benefit
	R^j	P^j/GSP gain	Tokyo I/R^j	(MFN+GSP)/GSP
	(Thousands of dollars)	(Per cent)		
East Asia	7,581	70	2.2	1.88
Rest of Asia	7,945	100	1.7	1.68
South Africa	..	..	..	..
West Africa	21	38	2.4	1.52
East Africa	13	04	3.8	1.01
Maghreb	9	24	4.3	1.81
Other Africa	9	23	4.3	1.76
Oil Mid-East	..	..	..	..
Other Mid-East	99	20	6.3	2.07
Caribbean	797	19	2.6	1.33
Central America	41	12	2.2	1.14
LAFTA	3,038	59	2.1	1.67
Total—LDC	19,446	61	2.1	1.65

compared with our lesser recoupment averaging two times the erosion, as shown in the third column of Table 8-2. But more important is the variation by region, showing that, for some regions, the gain from MFN cuts is quite unimportant compared with what they have (and retain) from GSP. The effect of permitting cuts under GSP on agricultural goods — of which a number still have high tariffs — while excluding them from the Tokyo cuts lies behind this different result. If agricultural goods, too, were subject to tariff cuts under the Tokyo Round proposals, the erosion would be much more similar for all regions. It is apparent the greatest losers are the rest of Asia, East Asia and LAFTA, both in terms of the absolute magnitude — which together accounts for 95 per cent of the total loss and in terms of the percentage lost to the region — 100, 70, and 59 per cent, respectively (column 2). Note that the rest of Asia loses all of its GSP benefits, while those who were big gainers through the GSP benefits on sugar and agricultural goods (East Africa, Caribbean, and Central America) lose very little of this from MFN cuts. Further, some regions which benefited very little from GSP (Maghreb, other African countries and other Middle East countries) lose very little to MFN cuts through erosion and recoup several times this loss (compensation ratios of 4.3, 4.3, and 6.3, respectively) and on balance they are nearly twice as well off after the MFN cuts. The GSP is not applicable to South Africa.

Thus, we must conclude along with Baldwin and Murray that the absolute erosion is small; the reason may simply be that, because the absolute magnitude of GSP benefits is so small, there is little to erode. More importantly, all regions are fully compensated for this erosion, in addition to gaining some additional MFN benefits beyond this. Only for East Africa, the Carribbean, and Central America are these additional benefits small (1, 1.33, and 1.14 per cent, respectively, of the GSP gains) but recall that the first two were major beneficiaries of the GSP, leaving only Central America gaining little from either the GSP or the MFN.

MORE GENEROUS PREFERENCES

The principle that developing countries should be conferred preferential treatment has been accepted by many individuals, institutions, and other national agencies. Thus Robert Baldwin writes that, while economists can and often do demonstrate that MFN cuts plus some redistribution are a better policy than preferences, "a counter-argument to this often is that the redistribution . . . cannot in fact be carried out because of political and institutional barriers. Thus, preferential arrangements may be the best feasible method" (Baldwin, 1976, p. 19).[6] The Brookings Institution conducted a tripartite study early in the decade, which advocated immediate elimination of tariffs for LDC goods in advanced countries, while GATT has officially sanctioned in the Tokyo Declaration of September 1973 the principle of discriminatory preferences counter to its founding tenet of equal treatment (MFN) in trade regulations (GATT, 1975, p. 10-11). Apparently, the principle has not been translated into anything more than the perfunctory practice that UNCTAD's evaluation alleges, as the benefits are extremely small. Below we show that this is as equally true for the American and other schemes as for the Canadian one. Here let us pose the following question: if one were to be far

more generous than the current GSP, how much benefit might one provide, and at how much of an impact (cost) to Canada?

In Hypotheses IVa, V, Va, VIII, and IX, we evaluate the potential for progressively more generous preferences. The first of these (IVa) involves lifting all exemptions from the scheme, while Hypotheses V and Va follow the spirit of the EEC's extra preferences for "associate" states as recently embodied in the Lomé Convention.[7] Hypothesis V incorporates inclusions but cuts the tariff by two-thirds rather than one-third for the least developed regions. Hypothesis Va further lifting the exclusions but for the least developed only. Least developed for the present purposes are defined as the rest of Asia, plus the three African regions other than South Africa and the Maghreb; this is a broader definition than adopted by the United Nations, and we use it to permit computation comparable to that in the rest of our analysis. Lastly, we take literally the requests of the developing countries to remove completely barriers on goods of "special interest" to them, cutting tariffs 100 per cent for Lary goods in Hypothesis VIII, and for the alternative list in Hypothesis IX. In these last two, we also apply MFN cuts as in Tokyo 1 with exclusions to other goods from LDCs and to all goods for MDCs.

The resulting import increments are shown in Table 8-1, whence three principal conclusions emerge about aggregate effects. First, generosity relative to the current GSP scheme does not cause a dramatic improvement for LDCs. Thus, under Hypothoses IVa, V, and Va the developing countries' import increments go up only slightly from the 1.1 per cent of GSP, to values of 2.4, 1.4 and 2.3, per cent, respectively, which means to Canada additional imports of 0.2 to 0.3 per cent. Second, it is only under the more generous schemes applied as literally and liberally, as requested by NIEO to "goods of special interest," that a significant benefit becomes manifest. The LDC increases would, under such schemes be 5.9 to 6.7 per cent. Note this is the only scheme of all the ones analysed here for which, while still assuming constant shares, the increase to LDCs is greater than that for MDCs. Third, the magnitude of the global impact is still small to Canada. Whereas Tokyo 1 cuts plus the current GSP (Hypothesis VI) would lead to an increased import flow annually of 4.8 per cent (or $1.2 billion), the more generous preferences system on top of Tokyo 1 would raise this to 5.8 per cent or $1.5 billion. Though unestimated trade diversion effects may increase the benefits to developing countries at the expenses of other advanced countries, the total impact upon Canada would be the same. Thus the incremental "cost" of a more effective preference above the likely impact of Tokyo cuts is only 1 per cent of our import volume annually. That preferences do make a difference for LDCs is evident by comparing Hypotheses VIII and IX with Hypothesis III, 50 per cent cuts with no exclusions. The global impact is almost exactly the same (5.7 and 5.8 per cent, $1.48 billion and $1.52 billion, respectively, but the Tokyo 3 case still gives the greater benefit to MDCs.

Regional variation shows the same by now almost tired theme: Asia predominates, benefiting far more than the others in all cases, and the more so in the more generous schemes. Thus, Asia accounts for 52, 72, 57, 74, 85, and 73 per cent, respectively, for each of the preference hypotheses analysed (IV, IVa, V, Va, VIII, and IX). Exemptions, which are largely manufactured goods under the GSP, matter a great deal to these regions, as the sharp increases for the no-exemptions case (Hypothesis Va) shows that, even under the extra preferences for the least developed, it is only East Africa that is subject to a significant improvement in its benefits; note that, for it, exemptions make little difference (IV versus Va, V versus Va), as do full cuts on Lary goods. Higher cuts (from IV to V, with rises, 2.5 versus 5.1) and cuts on alternative goods do matter; this is because processed agricultural goods rather than manufactures are its main items in trade.

West Africa and other African countries double their increments under special preferences but these are so small to start with ($37 and $39 million under Hypothesis IV) that the improvement is trite. Similarly, the generous preferences of Hypotheses VII and IX multiply the minimal benefits without changing the essential unimportance of Canadian tariff cuts to these regions. Recall the very low tariff height values for these regions, which arise because their basket of exports to Canada is heavily weighted to low-tariff raw materials. Consequently tariff cutting exercises will have little impact upon these baskets.

The Maghreb and other Middle East countries are not important beneficiaries of the GSP schemes even with no exemptions, their percentage increments falling below the average. With generous preferences, the effect is more significant, but not nearly as high as for Asia. However, the average for "all goods" hides the impact on manufactures. Thus, for example, under hypothesis VII, while the average for manufactured goods from LDCs rises by 29 per cent, the value for the Maghreb is 43 per cent — which is higher even than in Asia; for finished goods, the LDC average is 22 per cent, while, for the other Middle East countries, it is 29 per cent (see Appendix G).

In Latin America, only the Caribbean benefits at all importantly from GSP, with a pattern similar to East Africa attributable to the weight of agricultural goods. The other two regions do not obtain major benefits from any of the schemes either in the aggregate or for individual goods categories.

Let us return briefly to the extra preferences for LLDs. As formulated, they benefit only the rest of Asia, which it is clear from all that has preceded comes second only to East Asia in dominating whatever gains ensue from non-preferential tariff cuts. Thus a much stronger preference for those countries truly needing it would be required to achieve the aims of this approach. However, without evaluating just how much trade diversion may be possible among LDCs (something none of the studies in the literature has done or even proposed), it is not at all clear that tariff preferences would suffice to achieve this objective. One can see in Hypotheses VIII and IX that the benefits of a full cut on LDC goods are minimal for the least developed, especially under the Lary definition. Retaining this full cut for the LLDs and permitting only a lesser one (say, 50 per cent) for the other LDCs would merely reduce these latter's increment without raising that of the former.[8] Exemption lists (which overlap closely with NTB lists, as seen in Appendix D) make little impact on LLDs. Removal of these barriers is only likely to exacerbate the swamping of the LLDs by Asia. A hint is given by the fact that LLDs do a bit better, and other LDCs generally a bit worse, for the alternative list. These goods may come closer to a "special interest" group for LLDs only (for example, partly processed tropical products); we do not, however, believe that defining such a list and proposing special preferences to LLDs is likely to be an efficient alternative to other development strategies designed to stimulate the development of the least developed countries.

COMPARISON WITH OTHER STUDIES OF GSP EFFECTS

A number of studies have estimated the effect of GSP schemes in the United States, the EEC, Britain, and Japan, with results generally similar to those presented here for Canada. All these studies corroborate UNCTAD's allegations that GSP provides very little benefit. However, contrary to UNCTAD's view on erosion, they also reach the same conclusion we have here — erosion effects are not large and are generally more than compensated by gains from MFN cuts (Baldwin and Murray, 1977, pp. 40-41; Cline et al., 1976, p. 40). In Table 8-3, we compare some estimates of the GSP effects for the United States and Canada, results for other countries being generally similar.[9] These estimates indicate higher benefits to developing countries both with and without exemptions than we find for Canada: about 0.5 to 1.0 per cent for the former and 0.8 to 1.8 per cent for the latter compared with Canadian values of 0.1 and 0.3 per cent. Rounding errors being considered, Canadian values are about one-fourth or less of American ones, though part of the difference is the trade diversion effect we have not estimated. The remainder of the explanation probably lies in the difference between the full cut for the American GSP compared with the one-third cut for Canada. Note further that the Canadian GSP is even slightly less significant in size than the effect of the Offshore Assembly Provisions (OAP), which Finger estimates.

TABLE 8-3
Selected Estimates of Growth Rates of Canadian and United States Imports from Developing Countries and World under GSP Tariff Cuts

	Growth in imports	
	LDC base	World base
	(Per cent)	
Canada (one-third cut)		
Corbo-Havrylyshyn		
GSP restricted	1.1	0.1
GSP unrestricted	2.4	0.3
United States (full cut)		
Clague		
No restrictions	..	..
Manufactures only	..	0.6
U.S. Tariff Commission		
GSP restricted	..	1.0
GSP unrestricted	..	1.8
Manufactures	..	1.6
Baldwin and Murray		
GSP restricted	..	0.5
GSP less restricted	..	0.8
Finger		
OAP system	..	0.4

The effect of lifting exemptions is generally the same, approximately doubling the small numbers in question.[10] It is equally true for Canada as for the United States, and also other GSP schemes; as Cooper puts it for the EEC, "the scheme is most generous for those products in which the developing countries are least competitive" (Copper, 1972, p. 381), or as the U.S. Tariff Commission puts it for the United States, "preferences would have the greatest effect on the imports of those products which have been reserved from the tentative U.S. offer" (U.S. Tariff Commission, 1972, p. 57). One may note in Appendix G that removing the restrictions in Canada raises the increase for manufactures from 3.2 per cent to 9.8 per cent, and for Lary, alternative, and finished

goods, from 3.4, 2.9, and 3.7 per cent to 10.4, 7.0, and 8.7 per cent, respectively. It is clearly these goods that hold the greatest potential for the LDCs, but it is also these same goods that hold the greatest threat to MDCs — a threat which they defend against by exempting these goods from preferential schemes and MFN tariff cuts, plus inclusion of them in quota and other NTB lists.

CONCLUDING OBSERVATIONS

The main conclusion on Canada's preference system needs no belabouring: as it stands, its effect is minute; only a drastic cut on a set of goods of more interest to LDCs would provide anything like significant benefits, which is generally in line with findings for other GSP schemes. It is also significant that the global impact of even very generous schemes is very small in the aggregate. However, as most writers on the subject have recognized, this small aggregate effect hides large ones in a very few sectors, which are to no one's great surprise the "sensitive" industries found again and again on various lists: NTB lists, exemptions lists, safeguard lists, hard-core non-negotiable lists, and so on. Unfortunately for the LDCs, these same sectors or commodity groups (textiles, clothing, footwear, metal utensils, pottery products, canned foods, and the like) also appear on their lists of "special interest," or "labour-intensive," or "comparative advantage" goods, whose exports they wish to promote. Thus, despite its minuscule aggregate effects, the GSP provokes reactions such as that of the President of the Canadian Automotive Industries Association, who felt the general preferential tariff to LDCs was a mistake and that "if the last vestige of tariff is reduced for the developing countries, then the ball game is over. There will be no after market [auto parts] industry in Canada and we will have traded away 15,000 jobs" (*Globe and Mail*, May 25, 1977, p. B1). Such sentiment cannot be attributed simply to outmoded protectionist views in the spirit of the "candlemaker's petition," for it is the case that some industries will be particularly hard hit and adjustment policies will be required.

Thus, it is absolutely imperative that the sectoral impacts be analysed and considered in any proposals for more generous GSP, despite the very small size of the aggregate effect.[11] A potential resolution to this conflict has been suggested by Finger (1976), though we mention it here without judgment as to viability for Canada, but rather as further elaboration of the political feasibility issue. He suggests that offshore assembly provisions, which eliminate tariffs only on the value added by LDCs to components imported from the United States can, if extensively applied, be as beneficial to LDCs as preferences (see Table 8-3). But unlike preferences, they are far more feasible politically because they increase demand for U.S. components. He contends this would "generate domestic political support in the producing sector, which means that OAP is more likely to attract sufficient political push for enactment and expansion than a tariff preference scheme, which has only widely diffused consumer interests and good will to back it" (Finger, 1976, p. 610).[12]

Whether correct or not for the United States, and whether applicable or not to Canada, this distinction highlights the crucial difficulty in achieving the objectives of preferential schemes.

9 Summary and Conclusions

CANADA'S EXPORTS TO DEVELOPING COUNTRIES

Given Canada's large natural resource endowments, one might expect from a simple interpretation of the Heckscher-Ohlin-Samuelson comparative advantage theory that the basket of Canadian exports would include significant proportions of such resource goods, especially in exports to developed countries. However, relative to developing countries, Canada is also richer in capital endowments and therefore one might further expect that the proportion of manufacturing exports in the export basket to LDCs would be higher than in the export basket to other countries. Neither expectation is borne out by facts, as the manufacturing share is the same for both export baskets. Even at a higher level of disaggregation, looking at export baskets by stage of fabrication categories, and commodity group detail, much the same picture emerges.

The share of semi-finished products and end products are almost the same in both export baskets. The only sector where export to LDCs is higher than to MDCs is machinery and transport equipment — 19.56 per cent versus 11.29 per cent during the 1971-75 period. However, one must qualify this apparent indication of Canada's competitiveness by noting that a good deal of tied aid flowing from Canada to LDCs is in the form of transportation equipment.

At a higher level of disaggregation for primary commodities, some important differences between the two export baskets emerge. In the basket to LDCs, food is considerably more important, whereas raw materials predominate in the basket to developed and socialist countries.

Considering the changes in the pattern of trade over time, and considering the evolution of these trade patterns from the 1960s to the 1970s, the apparent strengths of the Canadian export basket are accentuated. The share of primary commodities in both baskets, that is, to LDCs and other countries, has increased for the 1971-75 period in comparison with the 1966-70 period. For the LDC basket, the share has changed from about 36.6 per cent in the first period to 51.9 per cent in the second period; for the basket of exports to developed and socialist world, this share has moved from 41.8 to 46.1 per cent. The total of manufactured products, both semi-finished and end, being of course a residual of primary commodities, has consequently dropped from the first period to the second in the case of both export baskets. If one looks at end products alone, however, an interesting result emerges. The share of exports of end products to developed and socialist countries has remained constant at 35 per cent; the share in the export basket to the developing countries has declined from 38 to 35 per cent. This dynamic comparison strongly reinforces the conclusion, from the static review of the pattern of trade, that Canada is not able to compete effectively in the export of manufactured goods even in the markets of less developed countries. The next important characteristic in the pattern of Canadian exports concern the high concentration in three principal commodities. Over 30 per cent of exports in both of the LDC and MDC baskets is accounted for by wheat, road motor vehicles, and paper and paper products. Within these three commodities, some slight difference exists in the composition of the export baskets. Wheat is much more important in the export basket to LDCs, whereas road motor vehicles are relatively more important in the export basket to MDCs. This latter fact is no doubt largely explained by the exports to the United States under the Canada-U.S. Automotive Agreement.

Finally, it is notable that, when the developing world is disaggregated into four major areas (Asia, Africa, Middle East, and Latin America), the composition of the export basket to each of these areas at major commodity grouping levels is not very different one from the other. Thus, as is the case for the MDC and LDC baskets, for each of these four areas, primary commodities account for approximately 40 to 50 per cent of exports with manufactured products accounting for 50 to 60 per cent of the exports. Slight variations are perceptible in that the share of primary commodities in the exports to Latin America is some-

what lower at 36 per cent while the share for primary commodities is highest in the case of Asia at 50 per cent.

Using a market share analysis to decompose the growth of Canadian exports to developing countries into a world growth effect, market effect, commodity composition effect, competitive effect, and price effect, we find that the predominant influences are the world growth effect and price effect, with market effects, commodity composition effect and competitive effects having negative values. In other words, our exports are growing largely because of the growth in the market for exports to less developed countries and, to a lesser extent, because the prices of our export basket goods have increased. Negative values for the market effect and commodity composition effects in the analysis mean that Canada's export links have continued to be with the slowest-growing LDC markets for developed country exports, and have been concentrated in commodities with the lowest growth in trade. The negative value for competitive effect points to a declining ability of Canadian exports to compete in developing country markets. This result is consistent with our earlier finding on the declining share of manufactured products as part of our exports to developing countries. Thus, in the manufactured goods, which have been growing fastest in world trade, Canada has fared least well.

CANADA'S TRADE BARRIERS

Reuber has concluded that the level of Canadian tariffs is not biased against developing countries. Our results confirm this only if one measures the size of the average tariff height on the basket of all imports from developing countries. In this case, we obtain an average tariff of 5 per cent for imports from LDCs compared to 6.7 per cent for the developed country basket. However, this is an illusory perception, as the conclusion is completely reversed by simply excluding one commodity which faces a zero tariff and accounts for about half of the LDC basket, namely, crude petroleum. The values are then 11.4 per cent for the LDC basket and 6.7 per cent for the MDC basket. This is not to negate Reuber's conclusion, but rather to suggest that the total basket inclusive of crude petroleum, is not representative of the third world. A zero tariff in this product is of course beneficial to the few countries which have the resource (OPEC) but, to the rest of the third world, it is surely the tariff structure for all other items that matters.

For the Johnson-Balassa hypothesis that tariffs are biased in the sense that they are highest on goods of special interest to LDCs, the evidence is somewhat unclear. If "special interest" is defined as all manufactured goods or the Lary list comprising labour intensive goods, then the height of tariffs in Canada facing the LDC basket is decidely higher than that facing the basket of imports from developed countries. Thus, for Lary goods, the LDCs face a tariff of 16.9 per cent and the MDC one of 8.5 per cent. If, however, we interpret "special interest" as reflecting current comparative advantage exhibited by the ability to sell in the Canadian market, and include in this not only manufactured goods but also semi-finished products, the bias in tariff height is no longer present. For such an alternative definition of "special interest" goods, the values are 15 per cent for both LDCs and MDCs. Nevertheless, the picture generally painted is that something close to bias does exist.

When we look at the different regions of the developing world, there are substantial variations in the height of the Canadian tariff faced by each region. Regardless of the subset of goods used for calculating the bias effect, the height of tariffs faced by the Asian region is generally much higher, reflecting the importance to them of light manufactured goods in exports to Canada. The lowest tariff heights are faced by the Middle East and West Africa, reflecting the significance of crude petroleum exports to these regions. One might add here that the use of non-tariff barriers is strongly concentrated in goods such as textiles and other light manufactures, which reinforces the conclusion of the regional impacts — namely, that Asia faces the strongest trade barriers in Canada.

Finally, in making a comparison of tariff heights between Canada and the EEC, it is generally found that the extent of bias in Canadian tariffs is higher. In compensation for this, however, it is also found that the use of non-tariff barriers has in the past been more widespread in the EEC than in Canada.[1] Recently however, extensive growth of the use of non-tariff barriers has also taken place in Canada, perhaps reversing this conclusion.

But bias in tariff barriers is not measurable simply by the height of the tariff, for what in the final analysis matters to the developing countries is the volume of new exports that would be generated by the elimination of all tariffs. On the assumption that each region maintains its current share in imports to Canada for each commodity, the evidence on bias through such a restrictive effect on trade flows is generally the same as found for the analysis of tariff height. For all goods, LDC imports are restricted by 7.1 per cent; MDC imports by 11.9 per cent; for all except petroleum the values are 16.9 and 11.9 per cent, respectively. For the Lary definition of "special interest" goods, the restrictive effect on LDCs is very

high at 31 per cent compared with 16 per cent for MDCs. However, for the alternative definition the values are similar at 21 and 23 per cent, respectively. Thus, once again, the conclusion about bias depends on which subset of goods one has in mind.

CANADA'S IMPORTS FROM DEVELOPING COUNTRIES

Canada's imports from LDCs as a share of total Canadian imports are among the lowest of the developed world. Thus, in 1973, this share was 24.0 per cent for the United States; 40.6 per cent for Japan; 21.0 per cent for France; 16.2 per cent for West Germany; 22.7 per cent for Britain and only 9.6 per cent for Canada.

One could argue that Canada's smaller share of imports from LDCs is due to both Canada and the LDCs being exporters of primary commodities. Again, this contention is not supported by the empirical evidence. If we restrict our comparison to only trade in manufactured goods, we find that in 1973 the share of LDCs by individual MDC was: United States 8.4 per cent; Japan 6.3 per cent; France 2.8 per cent; West Germany 4.3 per cent; Britain 5.4 per cent; and Canada 2.7 per cent.

If we consider the origin of Canada's imports by areas of the developing world, we find that Latin America supplied 49 per cent of total Canadian imports of primary commodities from the developing world. On the other hand, in the case of manufactured goods, Asia supplied 73 per cent of the total of Canada's imports of this type of commodity from the developing world.

When comparing the commodity composition of Canada's import basket from LDCs and MDCs, we observe, as expected, a substantial difference. Thus, in the 1971-75 period, primary commodities have a weight of 79.8 per cent in the LDC basket and only 13.2 per cent in the MDC basket. For manufactured goods, the opposite is true. The weight for the LDC basket is 19.8 per cent and for the MDC basket 85.6 per cent. If we look at the commodity composition of Canada's import basket from different areas in the LDC world, important differences emerge. The composition of the basket from Asia is similar to the composition of the MDC basket rather than to the total LDC basket.

When we analyse Canada's imports from LDCs using a market share model, we find that a major part of the increase in Canada's imports of primary commodities is accounted for by price changes. On the other hand, for total manufactured goods, the increase in competitiveness is as important as the world growth effect in accounting for the total increase in Canada's imports from the developing world. If we look at different areas in the developing world, we observe that a major part of the increase in import flows from LAFTA countries can be accounted for by the increase in competitiveness. In the case of Asia, Canada's main trader in manufactured goods, the world growth effect and commodity composition effect are the most important factors that account for the import increases.

THE EFFECTS OF CHANGE IN CANADA'S TARIFF STRUCTURE

Measuring the full trade restricting effect of tariffs is of great interest, though the conclusion of such an exercise may be academic in the sense that full tariff cuts permitting such a level of new trade flows are unlikely for several decades. More realistic prospects for increasing trade flows through tariff reduction are to be found in the probable outcome of the Tokyo Round GATT negotiations, which were in full session in Geneva at the time of writing. In addition, some new trade flow increments were already being generated (or have been for a few years) as a result of the Generalized System of Preferences, which in Canada, began functioning in 1974. If we hypothesize that the Tokyo Round will result in linear tariff cuts of 50 per cent, with textiles and agricultural goods excluded, it is found that, globally, the effect on imports into Canada is quite small, and minimal for imports from developing countries, causing them to increase by only 1.2 per cent. Most of the explanation for the low value of the increase in Canada's imports from LDCs lies in the exemption of textile goods from tariff cuts. If these, too, are subject to 50 per cent cuts, the import increment nearly triples for LDCs to 3 per cent, while the global effect is only slightly higher at 5 per cent. Thus, the considerably increased benefit to LDCs of cutting tariffs on textiles comes at a very small added import "cost" to Canada.

The impact of the Canadian preferential tariffs for LDC imports (a reduction of one-third with some goods excluded) is absolutely minuscule for global imports, causing them to increase by one-tenth of one per cent. Neither is it of large benefit to the LDCs themselves, whose exports to Canada are augmented by a mere 1 per cent. Once again, the exemptions are quite important. If these goods, which include many textiles, are also subjected to the cuts, the import increment is approximately doubled, which at 2 per cent is still a small benefit to LDCs.

In short, both the GSP and Tokyo Round effects are quite small for LDCs, and could only start to become significant if the items usually exempted such as textiles, are also subjected to tariff cuts. In this regard, comparison with studies for the advanced countries show Canada to be no better and no worse as a realistic potential market for large increments of LDC trade.

Within the third world, however, there is a great deal of variation of the potential impacts of these two tariff cutting exercises. The bulk of the benefit accrues to East Asia, South Asia and, least of all, to the LAFTA countries; the first and third of these are of course the richest of the LDC regions. For the other regions, the impact of both Tokyo cuts and GSP is extremely small. As described in our analysis of trade patterns, the export basket from these regions contains largely unprocessed and semi-processed items. In measuring tariff height, we observe that these items have low tariffs and, in computing elasticities, we note that they had low elasticity values. These three facts clearly explain the insignificance of the import increments for these regions. Indeed, as long as we assume a proportional sharing among LDC regions of any increased import demand, even allowing greater preferences for the least developed, will not make much difference. Those who benefit most from free trade will still be countries with the best established export channels and supply capacity for goods with presently high tariffs and high elasticities, that is, more processed goods. Asian exporters will for some time continue to swamp others in the third world.

Given the low overall impact of existing preferences and likely GATT cuts, we ask what would be the consequence of implementing, quite literally, the full preference to LDCs on "goods of special interest" as advocated by UNCTAD and the New International Economic Order? Globally, such a scheme means increased imports to Canada of about 5.8 per cent (compared with 4.8 per cent for a combined Tokyo Round and GSP set of cuts), thus only slightly more "cost" in terms of import absorption. To the LDCs, however, this has a substantial impact, depending on one's definition of "special interest goods." LDC exports to Canada in total would increase by 5.9 to 6.7 per cent, compared with 1.7 per cent under the Tokyo plus GSP cuts. Thus, at the "cost" of increasing our import absorption by one-fifth, vis-à-vis the likely effects of the Tokyo Round (5.8 per cent versus 4.8 per cent), one can triple or quadruple LDC export creation by an across-the-board full preference for LDCs.

In summary, the global adjustments to higher import levels in Canada are not very large under any of the situations hypothesized. Even under the most generous preferences to developing countries, this is always less than 6 per cent. However, the precise formulas used and the list of items sheltered from cuts can affect very considerably the size of the export creation benefit to developing countries. This varies from as little as 1.1 per cent to as much as 6.7 per cent. It appears that it would cost Canada little and allow the LDCs to gain much.

Appendixes

A Grouping of countries by Region and Area

In this appendix, we group the countries of the world into different groups. First, we group the countries into three major groups: less developed countries, developed countries, and socialist countries.

The less developed countries are grouped into four regions: Asia, Africa, Middle East, and Caribbean and Latin America. These regions are further divided into twelve subregions: East Asia, the rest of Asia, South Africa, West Africa, East Africa and Southern Africa, Maghreb, other Francophone African countries, Middle East oil exporting countries, other Middle East countries, Caribbean, Central America, and the member countries of the Latin America Free Trade Association (LAFTA).

The developed countries are divided into six regions: Australia and New Zealand; United States; Japan; the original six members of the European Economic Community (Belgium, France, Italy, Luxembourg, Netherlands, and West Germany); Britain; and other European countries. The socialist countries, comprising the rest of the world, are not analysed in this study because the nature of their trade relations is quite different, being determined much more on a bilateral agreement basis.

A more comprehensive breakdown is as follows (countries marked with an asterisk * have less than $2 million annually in trade with Canada):

Less Developed Countries

A Asia

1 East Asia includes South Korea, Philippines, Taiwan, Singapore, and Hong Kong.

2 The rest of Asia includes Bangladesh, India, Indonesia, Malaysia, Pakistan, Sri Lanka, Thailand, and Vietnam, and also *Afghanistan, *Burma, *Khmer Republic-Laos, and *Portuguese Asia.

B Africa

3 South Africa

4 West Africa includes Ghana, Nigeria, Sierra Leone, and Liberia, and also *Gambia.

5 East Africa and Southern Africa includes Angola, Kenya, Mauritius and dependencies, Mozambique, Sudan, Tanzania, Uganda, Zambia, and the smaller Commonwealth African countries of Seychelles, St. Helena, Ascension, Tristan de Cuhna, Botswana, Lesotho, and Swaziland; and also *Ethiopia, *Malawi, *Rhodesia, *Somalia, *Portuguese Africa, and *Spanish Africa.

6 Maghreb includes Algeria, Morocco, and Tunisia.

7 Other Francophone African countries include Cameroon, Gabon, Guinea, Ivory Coast, Mauritania, Senegal, Zaire (with Burundi and Rwanda), and the former French African states of Central African Empire, Congo, Niger, Chad, Upper Volta, Comoro, Reunion, Afars and Issas; and also *Benin (Dahomey), *Malagasy, *Mali, and *Togo.

C Middle East

8 Middle East oil exporting countries include Bahrain, Emirates, Iran, Iraq, Kuwait, Libya, and Saudi Arabia, and also *Qatar, and *Oman.

9 Other Middle East countries include Cyprus, Israel, Lebanon, Syria, Turkey, United Arab Republic, and Yemen PDR and Yemen, and also *Jordan.

D Latin American countries

10 Caribbean countries include Bahamas, Belize, Barbados, Dominican Republic, Guyana, Haiti, Jamaica, Leeward and Windward Islands (including the British Virgin Islands), Netherlands Antilles, Surinam, Trinidad-Tobago, and the U.S. Virgin Islands, and also *Bermuda, *French West Indies (Guadeloupe and Martinique) and *French Guiana.

11 Central America includes Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

12 The Latin America Free Trade Association (LAFTA) includes Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay, and Venezuela, and also *Paraguay.

Developed countries

13 Australia and New Zealand

14 United States

15 Japan

16 The European Economic Community (the original six founding members, except where otherwise indicated) includes Belgium, France, West Germany, Italy, Netherlands, and Luxembourg.

17 Britain

18 Other European countries include Austria, Denmark, Finland, Greece, Ireland, Malta, Norway, Portugal, Spain, Sweden and Switzerland; and also *Iceland.

Socialist Countries

19 Socialist countries include Albania, Bulgaria, China, Cuba, Czechoslovakia, East Germany, Hungary, North Korea, Poland, Romania, Russia, and Yugoslavia.

B Canadian Exports by Region: Main Commodities

In this appendix, we present the information on Canada's export of the three most important commodities within each commodity group in Canada's total exports to the developing world. Computations are done for the two time periods 1966-70 and 1971-75.

TABLE B-1
Composition of Canadian Exports, Three Most Important Commodities, by Region, 1966-70

	SITC	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed world	Total, world
					(Per cent)			
Group 1	1041	25.43	11.65	18.03	5.22	12.25	4.87	5.43
	2046	2.58	4.65	3.89	6.74	5.18	.08	.47
	2022	.70	.37	.74	1.91	1.32	.06	.15
Group 2	1276	3.93	2.00	4.93	3.22	3.37	1.64	1.77
	2251	3.12	1.54	1.73	1.87	2.15	5.08	4.86
	1274	5.36	2.44	.71	.09	1.83	.30	.42
Group 3	2332	.01	.02	.01	.03	.02	.21	.20
	1321	.00	0.00	0.00	.03	.02	.25	.23
	1341	0.00	0.00	0.00	.00	.00	1.45	1.34
Group 4	2561	4.33	.47	.02	.15	1.29	1.28	1.28
	3541	.43	.19	1.10	1.35	.94	.13	.19
	2581	.89	1.29	.12	.48	.67	.16	.20
Group 5	2641	7.51	6.13	2.98	10.37	8.59	8.50	8.51
	2684	3.93	14.59	6.67	3.58	5.26	2.97	3.14
	2674	.33	.62	.85	3.33	2.03	.62	.72
Group 6.1	3732	4.42	17.61	6.48	17.75	13.44	17.47	17.17
	3733	.04	.11	.02	.03	.04	.05	.05
Group 6.2	3734	3.17	2.24	4.26	3.54	3.32	1.73	1.85
	3711	3.34	2.72	2.10	2.03	2.47	3.11	3.07
	3724	2.45	1.34	9.03	1.81	2.39	1.16	1.25
Group 7	3841	.14	.10	.19	.42	.29	.25	.25
	3821	.03	.06	.01	.34	.20	.12	.13
	3812	.09	.22	.27	.21	.18	.08	.09
Group 8	3931	.11	.64	.22	.55	.42	.25	.26
	3951	.03	.00	2.11	.03	.16	.47	.44
	1941	0.00	0.00	.00	.00	.00	.03	.03
Raw materials	1041	25.43	11.65	18.03	5.22	12.25	4.87	5.43
	1276	3.93	2.00	4.93	3.22	3.37	1.64	1.77
	1274	5.36	2.44	.71	.09	1.83	.30	.42
Semi-finished	2641	7.51	6.13	2.98	10.37	8.59	8.50	8.51
	2684	3.93	14.59	6.67	3.58	5.26	2.97	3.14
	2046	2.58	4.65	3.89	6.74	5.18	.08	.47
End products	3732	4.42	17.61	6.48	17.75	13.44	17.47	17.17
	3734	3.17	2.24	4.26	3.54	3.32	1.73	1.85
	3711	3.34	2.72	2.10	2.03	2.47	3.11	3.07
					(Millions of U.S. dollars)			
Total exports		251.20	118.16	61.21	511.31	941.89	11,578.38	12,520.27

In Tables B-1 and B-2, we present for each area the share of individual commodities (3-digit SITC code plus Statistics Canada stage of fabrication code) within each group in total Canadian exports to that area. In Tables B-3 and B-4, we present each 3-digit main commodity, giving the distribution of Canadian exports by areas.

TABLE B-2
Composition of Canadian Exports, Three Most Important Commodities, by Region, 1971-75

	SITC	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed world	Total world
					(Per cent)			
Group 1	1041	28.13	30.47	17.61	13.08	19.68	4.25	5.48
	2046	.93	1.88	1.43	4.25	2.77	.01	.23
	2022	.75	.42	.39	3.07	1.82	.05	.19
Group 2	2251	5.41	1.32	2.10	2.15	2.85	5.19	5.00
	1276	3.11	1.69	2.37	2.67	2.61	1.19	1.30
	1221	3.65	.25	.12	.35	1.14	1.20	1.19
Group 3	2332	.01	.08	.22	.47	.28	1.07	1.01
	1321	.02	.00	0.00	.06	.04	1.00	.92
	1341	0.00	0.00	0.00	.00	.00	2.73	2.51
Group 4	2561	4.99	.08	.49	.77	1.70	1.25	1.29
	3541	.33	.27	.55	1.05	.71	.14	.18
	2599	.38	.59	.18	.54	.46	.18	.21
Group 5	2641	8.19	3.62	3.74	10.78	8.35	6.33	6.49
	2684	2.94	1.41	4.67	2.44	2.70	1.52	1.61
	2674	.50	1.06	.20	2.86	1.72	.55	.64
Group 6.1	3732	2.51	9.01	7.91	14.34	9.92	19.50	18.73
	3733	.01	.05	.20	.02	.04	.06	.06
Group 6.2	3724	3.40	1.63	9.48	1.81	3.10	.82	1.00
	3711	2.17	1.52	4.15	2.29	2.38	2.97	2.92
	3719	1.84	2.88	2.83	2.17	2.26	1.51	1.57
Group 7	3861	.28	.47	.24	.33	.33	.20	.21
	3812	.07	.30	.17	.28	.22	.07	.08
	3841	.10	.14	.05	.33	.21	.33	.32
Group 8	3931	.22	.79	.18	.31	.33	.22	.23
	3951	.02	.01	.04	.01	.02	.08	.08
	1941	.00	.00	.00	.00	.00	.03	.03
Raw materials	1041	28.13	30.47	17.61	13.08	19.68	4.25	5.48
	1276	3.11	1.69	2.37	2.67	2.61	1.19	1.30
	1043	.21	.83	12.14	.23	1.73	1.08	1.13
Semi-finished	2641	8.19	3.62	3.74	10.78	8.35	6.33	6.49
	2251	5.41	1.32	2.10	2.15	2.85	5.19	5.00
	2046	.93	1.88	1.43	4.25	2.77	.01	.23
End products	3732	2.51	9.01	7.91	14.34	9.92	19.50	18.73
	3724	3.40	1.63	9.48	1.81	3.10	.82	1.00
	3711	2.17	1.52	4.15	2.29	2.38	2.97	2.92
					(Millions of U.S. dollars)			
Total exports		510.66	269.57	243.43	1,019.88	2,043.55	23,585.11	25,628.66

TABLE B-3
Destination of Canadian Exports, by Commodity Group, Three Most Important Commodities, 1966-70

	SITC	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed world	Total, world
					(Per cent)			(Thousands of U.S. dollars)
Group 1	1041	9.40	2.03	1.62	3.93	16.99	83.01	679.4
	2046	11.08	9.37	4.06	58.79	83.30	16.70	58.6
	2022	9.17	2.25	2.38	50.94	64.74	35.26	19.2
Group 2	1276	4.47	1.07	1.36	7.43	14.33	85.67	221.3
	2251	1.29	.30	.17	1.57	3.33	96.67	609.0
	1274	25.85	5.55	.84	.88	33.11	66.89	52.0
Group 3	2332	.09	.09	.02	.67	.88	99.12	24.5
	1321	.03	0.00	0.00	.45	.49	99.51	29.2
	1341	0.00	0.00	0.00	.01	.01	99.99	167.6
Group 4	2561	6.80	.35	.01	.47	7.62	92.38	159.9
	3541	4.57	.94	2.86	29.43	37.81	62.19	23.4
	2581	8.99	6.09	.29	9.73	25.10	74.90	25.0
Group 5	2641	1.77	.68	.17	4.98	7.60	92.40	1,065.6
	2684	2.51	4.38	1.04	4.65	12.57	87.43	393.7
	2674	.02	.81	.58	18.82	21.13	78.87	90.6
Group 6.1	3732	.52	.97	.18	4.22	5.80	94.11	2,140.6
	3733	1.51	2.03	.15	2.33	6.02	93.98	6.1
Group 6.2	3734	3.43	1.14	1.12	7.79	13.48	86.52	232.1
	3711	2.19	.84	.33	2.70	6.06	93.94	383.8
	3724	3.94	1.01	3.54	5.91	14.39	85.61	156.4
Group 7	3841	1.11	.39	.37	6.89	8.75	91.25	31.3
	3821	.41	.41	.03	10.84	11.69	83.31	16.0
	3812	2.20	2.37	1.55	9.94	16.05	83.95	10.7
Group 8	3931	.87	2.34	.42	8.65	12.28	87.72	32.6
	3951	.15	.01	2.32	.25	2.73	97.27	55.5
	1941	0.00	0.00	.04	.18	.21	99.79	3.4
Raw materials	1041	9.40	2.03	1.62	3.93	16.99	83.01	679.4
	1276	4.47	1.07	1.36	7.43	14.33	85.67	221.3
	1274	25.85	5.55	.84	.88	33.11	66.89	52.0
Semi-finished	2641	1.77	.68	.17	4.98	7.60	92.40	1,065.6
	2684	2.51	4.38	1.04	4.65	12.57	87.43	393.7
	2046	11.08	9.37	4.06	58.79	83.30	16.70	58.6
End products	3732	.52	.97	.18	4.22	5.89	94.11	2,149.6
	3734	3.43	1.14	1.12	7.79	13.43	86.52	232.1
	3711	2.19	.84	.33	2.70	6.06	93.94	383.8
					(Millions of U.S. dollars)			
Total exports		251.20	118.16	61.21	511.31	941.89	11,578.38	12,520.27

TABLE B-4
Destination of Canadian Exports, by Commodity Group, Three Most Important Commodities, 1971-75

	SITC	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed world	Total, world
				(Per cent)				(Thousands of U.S. dollars)
Group 1	1041	10.23	5.85	3.05	9.50	28.64	71.36	1,404.0
	2045	7.87	8.45	5.80	72.12	94.24	5.76	60.1
	2022	7.88	2.30	1.96	64.17	76.31	23.69	48.8
Group 2	2251	2.15	.28	.40	1.71	4.54	95.46	1,281.4
	1276	4.75	1.36	1.73	8.15	15.99	84.01	333.8
	1221	6.09	.22	.10	1.18	7.58	92.42	306.0
Group 3	2332	.02	.08	.20	1.87	2.18	97.82	258.8
	1321	.05	.00	0.00	.26	.31	99.69	235.7
	1341	0.00	0.00	0.00	.00	.00	100.00	642.9
Group 4	2561	7.71	.07	.36	2.39	10.53	89.47	330.1
	3541	3.55	1.56	2.84	22.74	30.69	69.31	47.2
	2599	3.64	3.00	.85	10.39	17.88	82.12	52.6
Group 5	2641	2.51	.59	.55	6.61	10.25	89.75	1,664.3
	2684	3.64	.92	2.75	6.02	13.34	86.66	412.9
	2674	1.56	1.74	.29	17.73	21.32	78.68	164.5
Group 6.1	3732	.27	.51	.40	3.05	4.22	95.78	4,801.4
	3733	.43	.98	3.40	1.11	5.91	94.09	14.3
Group 6.2	3724	6.78	1.71	9.01	7.21	24.72	75.28	256.1
	3711	1.48	.55	1.35	3.12	6.49	93.51	748.0
	3719	2.33	1.93	1.71	5.49	11.47	88.53	402.2
Group 7	3861	2.72	2.42	1.11	6.36	12.61	87.39	52.7
	3812	1.66	4.00	2.02	14.34	22.02	77.98	20.0
	3841	.61	.46	.15	4.08	5.30	94.70	81.5
Group 8	3931	1.91	3.57	.72	5.25	11.46	88.54	59.6
	3951	.53	.14	.49	.41	1.57	98.43	19.8
	1941	.17	.01	.00	.13	.31	99.69	6.6
Raw materials	1041	10.23	5.85	3.05	9.50	28.64	71.36	1,404.0
	1276	4.75	1.36	1.73	8.15	15.99	84.01	333.8
	1043	.37	.77	10.18	.82	12.15	87.85	290.2
Semi-finished	2641	2.51	.59	.55	6.61	10.25	89.75	1,664.3
	2251	2.15	.28	.40	1.71	4.54	95.46	1,281.4
	2046	7.87	8.45	5.80	72.12	94.24	5.76	60.1
End products	3732	.27	.51	.40	3.05	4.22	95.78	4,801.4
	3724	6.78	1.71	9.01	7.21	24.72	75.28	256.1
	3711	1.48	.55	1.35	3.12	6.49	93.51	748.0
				(Millions of U.S. dollars)				
Total exports		510.66	269.57	243.43	1,019.88	2,043.55	23,585.11	25,628.66

C Canadian Imports by Region: Main Commodities

In this appendix, we present the information on Canada's imports of the three most important commodities within each commodity group in Canada's total imports from the developing world. Computations are done for the two time periods 1966-70 and 1971-75.

TABLE C-1
Composition of Canadian Imports, Three Most Important Commodities, by Region, 1966-70

	SITC	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed world	Total, world
					(Per cent)			
Group 1	3071	.20	14.10	.03	7.48	6.09	.16	.67
	1051	2.22	3.20	1.48	6.24	4.63	.95	1.27
	3061	1.31	20.86	0.00	2.94	4.43	.18	.55
Group 2	1283	.90	4.03	.28	10.18	6.66	.51	1.05
	2231	8.77	1.75	0.00	.03	1.95	.32	.46
	1263	.13	.97	1.34	2.18	1.55	.32	.43
Group 3	1331	0.00	16.08	83.82	40.89	34.16	.02	2.99
	2332	.01	.06	.21	19.18	11.31	.56	1.50
Group 4	3541	.08	.01	.03	.40	.25	.60	.57
	2513	.02	.01	.00	.18	.11	.31	.29
	2521	0.00	0.00	.02	.11	.07	.07	.07
Group 5	2653	11.46	.01	.16	.02	2.29	1.19	1.29
	2687	6.39	.49	0.00	0.00	1.31	.03	.14
	2631	5.15	.70	.06	.03	1.12	.24	.31
Group 6.1	3732	.01	.15	.01	.00	.02	21.80	19.91
	3733	.03	0.00	0.00	.00	.01	.43	.40
Group 6.2	3724	1.60	.00	.01	.01	.32	1.75	1.62
	3719	.09	.13	.02	.09	.09	6.53	5.97
	3729	.33	.01	.00	.01	.07	2.38	2.18
Group 7	3841	19.86	.03	1.23	.07	4.07	.89	1.17
	3899	3.74	.01	.02	.02	.75	.31	.35
	3851	3.38	.01	.07	.10	.73	.41	.44
Group 8	3931	1.28	.42	.25	.45	.59	2.08	1.95
	1941	.04	.01	0.00	.00	.01	.03	.03
	3951	.00	0.00	.06	0.00	.01	.14	.13
Raw materials	1331	0.00	16.08	83.82	40.89	34.16	.02	2.99
	1283	.90	4.03	.28	10.18	6.66	.51	1.05
	1051	2.22	3.20	1.48	6.24	4.63	.95	1.27
Semi-finished	2332	.01	.06	.21	19.18	11.31	.56	1.50
	2653	11.46	.01	.16	.02	2.29	1.19	1.29
	2231	8.77	1.75	0.00	.03	1.95	.32	.46
End products	3071	.20	14.10	.03	7.48	6.09	.16	.67
	3061	1.31	20.86	0.00	2.94	4.43	.18	.55
	3841	19.86	.03	1.23	.07	4.07	.89	1.17
					(Millions of U.S. dollars)			
Total imports		196.07	116.80	97.90	586.21	996.99	10,461.59	11,458.59

In Tables C-1 and C-2, we present for each area the share of the three most important individual commodities (3-digit SITC code plus Statistics Canada stage of fabrication code) within each group in total Canadian imports from that area. In Tables C-3 and C-4, we present for each 3-digit main commodity the origin of Canadian imports by region.

TABLE C-2
Composition of Canadian Imports, Three Most Important Commodities, by Region, 1971-75

	SITC	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed world	Total world
					(Per cent)			
Group 1	3061	.48	36.10	.00	3.61	5.38	.56	1.13
	3071	.24	6.44	.00	4.78	2.76	.20	.50
	1051	1.75	2.18	.32	3.83	2.28	.83	1.00
Group 2	1283	.22	5.27	.04	4.76	2.63	.55	.80
	2231	5.33	.12	0.00	.02	.99	.25	.34
	2422	3.17	.15	.00	.12	.65	.06	.13
Group 3	1331	0.00	27.84	96.34	55.80	54.28	.09	6.55
	2332	.00	.22	.05	9.87	4.26	.41	.87
	1321	.00	.00	.00	0.00	.00	1.39	1.23
Group 4	3541	.07	.02	.01	.23	.12	.58	.53
	2512	.20	.07	.03	.12	.10	1.14	1.02
	2513	.00	.23	.00	.10	.07	.25	.23
Group 5	2631	5.88	.41	.01	.05	1.14	.38	.47
	2653	5.29	.05	.04	.14	1.04	1.05	1.05
	2652	2.00	.02	.03	.83	.73	.38	.42
Group 6.1	3732	.11	.08	.00	.24	.13	24.91	21.96
	3733	.65	.01	.00	.00	.12	.59	.54
Group 6.2	3724	6.50	.02	.07	.14	1.27	2.06	1.97
	3729	2.20	.02	.00	.08	.44	2.36	2.13
	3711	.02	.01	.00	.88	.38	4.69	4.18
Group 7	3841	26.42	.09	.42	.71	5.26	.84	1.36
	3851	5.01	.01	.01	.46	1.12	.38	.47
	3894	3.65	.00	.00	.19	.75	.63	.64
Group 8	3931	.87	.66	.08	.37	.41	1.11	1.02
	1941	.07	.01	.00	.01	.02	.03	.03
	3951	.00	.00	.01	.00	.00	.07	.06
Raw materials	1331	0.00	27.84	96.34	55.80	54.28	.09	6.55
	1283	.22	5.27	.04	4.76	2.63	.55	.80
	1051	1.75	2.18	.32	3.83	2.28	.83	1.00
Semi-finished	2332	.00	.22	.05	9.87	4.26	.41	.87
	2631	5.88	.41	.01	.05	1.14	.38	.47
	2653	5.29	.05	.04	.14	1.04	1.05	1.05
End products	3061	.48	36.10	.00	3.61	5.38	.56	1.13
	3841	26.42	.09	.42	.71	5.26	.84	1.36
	3071	.24	6.44	.00	4.78	2.76	.20	.50
					(Millions of U.S. dollars)			
Total imports		539.83	306.15	843.63	1,264.13	2,953.75	21,835.71	24,789.46

TABLE C-3
Origin of Canadian Imports, by Commodity Group, Three Most Important Commodities, 1966-70

	SITC	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed world	Total, world
					(Per cent)			(Thousands of U.S. dollars)
Group 1	3071	.50	21.34	.04	56.78	78.66	21.34	77.2
	1051	2.98	2.56	.99	25.07	31.59	68.41	146.0
	3061	4.11	38.91	0.00	27.56	70.58	29.42	62.6
Group 2	1283	1.47	3.93	.23	49.80	55.43	44.57	119.9
	2231	32.46	3.86	0.00	.37	36.69	63.31	52.9
	1263	.50	2.28	2.65	25.83	31.27	68.73	49.4
Group 3	1331	0.00	5.49	23.97	70.01	99.46	.54	342.4
	2332	.01	.04	.12	65.46	65.63	34.37	171.8
Group 4	3541	.23	.01	.04	3.57	3.85	96.15	65.6
	2513	.10	.05	.00	3.10	3.25	96.75	33.4
	2521	0.00	0.00	.31	8.80	9.11	90.89	7.6
Group 5	2653	15.23	.01	.11	.10	15.45	84.55	147.5
	2687	77.31	3.53	0.00	0.00	80.84	19.16	16.2
	2631	28.14	2.27	.18	.46	31.06	68.94	35.9
Group 6.1	3732	.00	.01	.00	.00	.01	99.99	2,281.1
	3733	.11	0.00	0.00	.00	.11	99.89	45.5
Group 6.2	3724	1.68	.00	.00	.02	1.71	98.29	186.1
	3719	.03	.02	.00	.08	.13	99.87	683.6
	3729	.26	.01	.00	.02	.29	99.71	249.9
Group 7	3841	29.06	.03	.90	.31	30.31	69.69	134.0
	3899	18.27	.04	.05	.27	18.64	81.36	40.1
	3851	13.16	.02	.14	1.14	14.46	85.54	50.3
Group 8	3931	1.12	.22	.11	1.18	2.64	97.36	223.8
	1941	2.54	.20	0.00	.82	3.55	96.45	3.4
	3951	.02	0.00	.38	0.00	.40	99.60	14.5
Raw materials	1331	0.00	5.49	23.97	70.01	99.46	.54	342.4
	1283	1.47	3.93	.23	49.80	55.43	44.57	119.9
	1051	2.98	2.56	.99	25.07	31.59	68.41	146.0
Semi-finished	2332	.01	.04	.12	65.46	65.63	34.37	171.8
	2653	15.23	.01	.11	.10	15.45	84.55	147.5
	2231	32.46	3.86	0.00	.37	36.69	63.31	52.9
End products	3071	.50	21.34	.04	56.78	78.66	21.34	77.2
	3061	4.11	38.91	0.00	27.56	70.58	29.42	62.6
	3841	29.06	.03	.90	.31	30.31	69.69	134.0
					(Millions of U.S. dollars)			
Total imports		196.07	116.80	97.90	586.21	996.99	10,461.59	11,458.59

TABLE C-4
Origin of Canadian Imports, by Commodity Group, Three Most Important Commodities, 1971-75

	SITC	Asia	Africa	Middle East	Latin America	Total, developing world	Total, developed world	Total world
				(Per cent)				(Thousands of U.S. dollars)
Group 1	3061	.93	39.38	.00	16.26	56.58	43.42	280.6
	3071	1.04	15.88	.03	48.67	65.61	34.39	124.2
	1051	3.80	2.69	1.08	19.45	27.01	72.99	248.9
Group 2	1283	.60	8.16	.16	30.38	39.29	60.71	197.9
	2231	34.58	.43	0.00	.24	35.26	64.74	83.1
	2422	53.46	1.47	.01	4.82	59.76	40.24	32.0
Group 3	1331	0.00	5.25	50.09	43.47	98.82	1.18	1,622.6
	2332	.00	.32	.21	57.99	58.53	41.47	215.1
	1321	.00	.00	.00	0.00	.01	99.99	304.3
Group 4	3541	.30	.05	.08	2.25	2.69	97.31	130.2
	2512	.44	.08	.08	.60	1.20	98.80	252.1
	2513	.00	1.25	.01	2.22	3.48	96.52	56.4
Group 5	2631	27.03	1.07	.05	.49	28.64	71.36	117.5
	2653	11.01	.06	.12	.68	11.87	88.13	259.6
	2652	10.38	.05	.21	10.04	20.68	79.32	104.2
Group 6.1	3732	.01	.00	.00	.05	.07	99.83	5,443.1
	3733	2.65	.02	.00	.03	2.71	97.29	132.8
Group 6.2	3724	7.19	.01	.12	.37	7.70	92.30	488.2
	3729	2.25	.01	.01	.19	2.46	97.54	527.6
	3711	.01	.00	.00	1.07	1.09	98.91	1,036.5
Group 7	3841	42.16	.09	1.04	2.64	45.92	54.08	338.4
	3851	23.38	.02	.11	5.01	28.52	71.48	115.7
	3894	12.35	.01	.02	1.54	13.91	86.09	159.5
Group 8	3931	1.85	.80	.26	1.86	4.78	95.22	253.4
	1941	5.33	.45	.03	1.22	7.03	92.97	6.7
	3951	.03	.00	.70	.17	.90	99.10	16.1
Raw materials	1331	0.00	5.25	50.09	43.47	98.82	1.18	1,622.6
	1283	.60	8.16	.16	30.38	39.29	60.71	197.9
	1051	3.80	2.69	1.08	19.45	27.01	72.99	248.9
Semi-finished	2332	.00	.32	.21	57.99	58.53	41.47	215.1
	2631	27.03	1.07	.05	.49	28.64	71.36	117.5
	2653	11.01	.06	.12	.68	11.87	88.13	259.6
End products	3061	.93	39.38	.00	16.26	56.58	43.42	280.6
	3841	42.16	.09	1.04	2.64	45.92	54.08	338.4
	3071	1.04	15.88	.03	48.67	65.61	34.39	124.2
					(Millions of U.S. dollars)			
Total imports		539.83	306.15	843.63	1,264.13	2,953.75	21,835.71	24,789.46

D Miscellaneous Tables

TABLE D-1
Weighted Average Tariffs, Two-Digit SITC, Canada and European Economic Community, 1972-75

SITC	Canada	EEC	SITC	Canada	EEC
00.	3.90	1.97	53.	7.55	10.44
01.	3.68	6.15	54.	9.93	9.93
02.	10.43	0.05	55.	14.14	9.95
03.	3.62	11.80	56.	0.00	5.22
04.	5.59	1.53	57.	18.05	10.86
05.	3.94	11.20	58.	11.42	15.77
06.	15.10	3.26	59.	7.74	9.66
07.	2.98	11.11	61.	7.29	3.78
08.	2.31	0.39	62.	14.67	8.21
09.	12.18	9.95	63.	12.68	10.31
11.	12.28	29.16	64.	12.46	10.00
12.	25.52	39.77	65.	19.80	11.69
21.	0.03	0.00	66.	10.49	4.88
22.	0.30	0.02	67.	3.72	2.70
23.	1.43	0.16	68.	2.20	3.03
24.	0.09	1.38	69.	10.94	7.81
25.	0.00	0.02	71.	5.07	6.80
26.	3.26	1.81	72.	11.09	9.47
27.	0.58	0.17	73.	3.22	9.68
28.	0.07	0.17	81.	17.14	8.82
29.	3.03	5.85	82.	18.87	7.88
32.	0.04	2.68	84.	25.14	16.04
33.	0.87	0.97	85.	24.82	19.05
35.	0.00	0.00	86.	7.72	10.18
41.	5.58	1.04	89.	11.33	9.85
42.	8.60	8.97	91.	0.00	0.00
43.	6.78	11.06	93.	0.00	0.00
51.	7.61	9.94	94.	0.00	0.00
52.	6.90	2.44	95.	0.00	0.00
			96.	0.00	

For definitions, see United Nations, *Standard International Trade Classification Revised*, Statistical Papers Series M, no. 39, New York, 1961.

TABLE D-2
Codes—Lary

SITC Code of LDC Goods in Lary List							
1.	0320	53.	6521	104.	6666	155.	7299
2.	0520	54.	6522	105.	6671	156.	7311
3.	0532	55.	6531	106.	6673	157.	7312
4.	0533	56.	6532	107.	6674	158.	7313
5.	0535	57.	6533	108.	6785	159.	7314
6.	0536	58.	6534	109.	6931	160.	7315
7.	0539	59.	6535	110.	6932	161.	7316
8.	0551	60.	6536	111.	6933	162.	7317
9.	0554	61.	6537	112.	6934	163.	7329
10.	0555	62.	6539	113.	6941	164.	7331
11.	0620	63.	6540	114.	6942	165.	7358
12.	0814	64.	6554	115.	6951	166.	8124
13.	0990	65.	6556	116.	6952	167.	8210
14.	1221	66.	6557	117.	6960	168.	8310
15.	2431	67.	6558	118.	6971	169.	8411
16.	2432	68.	6559	119.	6972	170.	8412
17.	2433	69.	6561	120.	6979	171.	8413
18.	4111	70.	6562	121.	6981	172.	8414
19.	5511	71.	6566	122.	6983	173.	8415
20.	5512	72.	6569	123.	6985	174.	8416
21.	6112	73.	6574	124.	6988	175.	8420
22.	6113	74.	6575	125.	6989	176.	8510
23.	6114	75.	6576	126.	7121	177.	8612
24.	6119	76.	6577	127.	7122	178.	8613
25.	6121	77.	6578	128.	7125	179.	8614
26.	6122	78.	6613	129.	7129	180.	8616
27.	6123	79.	6618	130.	7142	181.	8617
28.	6129	80.	6623	131.	7143	182.	8641
29.	6299	81.	6624	132.	7149	183.	8642
30.	6311	82.	6631	133.	7151	184.	8911
31.	6312	83.	6632	134.	7152	185.	8912
32.	6314	84.	6634	135.	7171	186.	8914
33.	6318	85.	6635	136.	7173	187.	8918
34.	6321	86.	6636	137.	7181	188.	8919
35.	6322	87.	6637	138.	7183	189.	8921
36.	6324	88.	6638	139.	7192	190.	8923
37.	6327	89.	6639	140.	7195	191.	8924
38.	6328	90.	6641	141.	7196	192.	8929
39.	6330	91.	6642	142.	7198	193.	8930
40.	6421	92.	6643	143.	7199	194.	8941
41.	6422	93.	6644	144.	7221	195.	8942
42.	6423	94.	6645	145.	7222	196.	8944
43.	6429	95.	6646	146.	7232	197.	8952
44.	6511	96.	6647	147.	7241	198.	8971
45.	6512	97.	6648	148.	7242	199.	8972
46.	6513	98.	6649	149.	7249	200.	8991
47.	6514	99.	6551	150.	7250	201.	8992
48.	6515	100.	6652	151.	7291	202.	8993
49.	6516	101.	6658	152.	7292	203.	8994
50.	6517	102.	6664	153.	7293	204.	8995
51.	6518	103.	6665	154.	7294	205.	8996
52.	6519					206.	8999

TABLE D-3
Codes—Alternative

SITC Codes of LDC Goods in Alternative List			
1.	0133	58.	6532
2.	0138	59.	6534
3.	0483	60.	6535
4.	0520	61.	6537
5.	0532	62.	6556
6.	0533	63.	6557
7.	0535	64.	6562
8.	0536	65.	6566
9.	0539	66.	6569
10.	0551	67.	6575
11.	0554	68.	6577
12.	0555	69.	6578
13.	0611	70.	6624
14.	0615	71.	6636
15.	0616	72.	6642
16.	0711	73.	6666
17.	0713	74.	6672
18.	0751	75.	6673
19.	0752	76.	6674
20.	0814	77.	6714
21.	1124	78.	6715
22.	1221	79.	6821
23.	2431	80.	6871
24.	2433	81.	6931
25.	2516	82.	6932
26.	3321	83.	6960
27.	3322	84.	6971
28.	3323	85.	6972
29.	3324	86.	6979
30.	3325	87.	7142
31.	4214	88.	7173
32.	4222	89.	7241
33.	4223	90.	7242
34.	4224	91.	7249
35.	4225	92.	7292
36.	5314	93.	7293
37.	5315	94.	7331
38.	5324	95.	8310
39.	5415	96.	8411
40.	5611	97.	8412
41.	6114	98.	8413
42.	6121	99.	8414
43.	6123	100.	8415
44.	6129	101.	8420
45.	6311	102.	8510
46.	6312	103.	8641
47.	6318	104.	8914
48.	6324	105.	8930
49.	6327	106.	8941
50.	6328	107.	8942
51.	6514	108.	8944
52.	6517	109.	8972
53.	6519	110.	8991
54.	6521	111.	8992
56.	6522	112.	8993
57.	6531	113.	8994
		114.	8999

E Specification of Tariff Cut Hypotheses and Sharing Formulas

TARIFF CUT HYPOTHESES

In this appendix, we specify the precise formulas for estimating the effect of various tariff cuts. For Hypotheses I, II, III, and VII, these are, in effect, variants of equation (3.11) estimating total incremental imports by category i, computing import changes by region according to the various share formulas (A through E) described below. Whereas these four hypotheses involve tariff cuts according equal treatment to all importers, the others in the study (IV, V, VI, VII, and IX) are preferential ones in which greater tariff cuts apply in the case of goods originating in developing countries. Hypotheses on shares for these are consequently somewhat different. Before we present the equations for each of the hypotheses, a number of exemption lists which are utilized in the specification are shown as Schedules A, B, C, L, and N. In Schedules A and B, the SITC goods are quoted at the 1- or 2-digit levels of aggregation, while those in Schedules C and N are reported at the 4-digit level.

Schedule A: Agricultural Goods--
SITC nos. 0, 1, 22, 29, 4.

Schedule B: Textile Goods—
SITC nos. 65, 84.

Schedule C: Exemptions from Canadian GSP—
SITC nos.

6513	6532	7293
6514	6533	8411
6515	6535	8412
6516	6536	8413
6517	6537	8414
6518	6538	8415
6519	6540	8416
6521	6555	8420
6522	6556	8510

These are the SITC numbers quoted in Schedule II in Revenue Canada, *Order Respecting the Benefits of the General Preferential Tariffs*, Memorandum 047-518-2, Ottawa, June 20, 1974. The assignment of SITC numbers was done by the authors of this study. Note that the above test includes all of SITC 8510, footwear, to reflect the withdrawal in August 1975 of the preferential tariff on rubber footwear, and the extention of this order since then.

Schedule L: Least Developed Regions among Developing Countries—Region 2, the rest of Asia; region 4, West Africa; region 5, East Africa; region 7, other Francophone African countries.

Schedule N: SITC Categories under NTB Control, Canada—

0014	0230	0721	0813	6516	8411
0111	0240	0722	0814	6532	8412
0114	0250	0723	0819	6535	8413
0221	0711	0811	6513	6537	8414
0222	0713	0812	6514	6569	

This is the import control list as of January 10, 1972, as found in *The Importer's Bulletin*, vol. 63, no. 2, January 12, 1977, and Table.

Tariff Cut Hypothesis—The terminology used here follows that of Chapter 7, with imports, increments thereof, tariffs, and elasticities represented by M, ΔM, t, e, subscript i denoting a goods category, superscript j denoting region of origin, where $j = 14$ means all advanced countries, $j = 13$ all developing countries, and $j = 1 \ldots 12$ the separate regions in the developing group.

I: TOKYO 1 — Linear cut plus exemptions.

$$\Delta M_i = 0 \quad \ldots\ldots\ldots\ldots \text{ for } i \in (\text{AUB})$$

$$\Delta M_i = .5 \left[\frac{t_i}{(1 + t_i)}\right] e_i \cdot M_i \quad \text{for } i \notin (\text{AUB})$$

II: TOKYO 2 - Linear cut, textiles not exempt.

$$\Delta M_i = 0 \quad \ldots\ldots\ldots\ldots \text{ for } i \in \text{A}$$

$$\Delta M_i = .5 \left[\frac{t_i}{(1 + t_i)}\right] e_i \cdot M_i \quad \ldots\ldots \text{ for } i \notin \text{A}$$

III: TOKYO 3 - Linear cut, no exemptions.

$$\Delta M_i = .5 \left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i \quad \text{..... for all } i$$

IV: GSP - Canadian Preference System of 1974

$$\Delta M_i^{14} = 0 \quad \text{..... for all } i$$

$$\Delta M_i^{13} = 0 \quad \text{..... for } i \notin C$$

$$\Delta M_i^{13} = \frac{1}{3}\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{13} \quad \text{for } i \notin C$$

Allocation of ΔM_i^{13} by the 12 regions of the developing world is done according to the existing shares for each good, namely the parameter γ_i^j described below. This applies by definition to IVa, V, Va; for VI, VIII, and IX, exceptions are noted below.

IVa: GSPFUL - Canadian Preference System with no exemptions.

$$\Delta M_i^{14} = 0 \quad \text{..... for all } i$$

$$\Delta M_i^{13} = \frac{1}{3}\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{13} \quad \text{for all } i$$

V: GSPP - with double cut for least developed

$$\Delta M_i^{14} = 0 \quad \text{..... for all } i$$

$$\Delta M_i^{13} = 0 \quad \text{..... for all } i \in C$$

$$\Delta M_i^{j} = \frac{2}{3}\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{j} \quad \text{.. for all } j \in L, \text{ all } i \notin C$$

$$\Delta M_i^{j} = \frac{1}{3}\left[\frac{t_i}{(1=t_i)}\right] e_i \cdot M_i^{j} \quad \text{.. for all } j \notin (L, 14), \text{ all } i \notin C$$

Va: GSPPFUL - GSP with double cut and no exemptions for least developed

$$\Delta M_i^{14} = 0 \quad \text{..... for all } i$$

$$\Delta M_i^{j} = \frac{2}{3}\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{j} \quad \text{..... for } j \in L, \text{ for all } i$$

$$\Delta M_i^{j} = 0 \quad \text{..... for } j \notin (L, 14)$$

$$\Delta M_i^{j} = \frac{1}{3}\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{j} \quad \text{..... for } j \notin (L, 14), \text{ for } i \notin L$$

VI: GSP+TOKYO 1 - Preferences on top of Tokyo cuts

$$\Delta M_i^{14} = 0 \quad \text{..... for } i \in (A \cup B)$$

$$\Delta M_i^{14} = .5\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{14} \quad \text{for } i \in (A \cup B)$$

$$\Delta M_i^{13} = 0 \quad \text{..... for } i \in (B \cap C)$$

$$\Delta M_i^{13} = \frac{1}{3}\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{13} \quad \text{for } i \in (A \cup CB \subset C)$$

$$\Delta M_i^{13} = .5\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{13} \quad \text{for } i \in (C \subset B)$$

$$\Delta M_i^{13} = \frac{2}{3}\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{13} \quad \text{for } i \in (A \cup B \cup C)$$

The overlap is specified only for C and B, as the union of A and C is in any event a null set. The overlap is stated only for C, B as the union of A and C.

VII: ELIMINATE - All tariffs cut to zero

$$\Delta M_i = 1.0\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i \quad \text{..... for all } i$$

VIII: LARPREF - Full cut to zero on Lary goods from LDCs, Tokyo 1 otherwise

$$\Delta M_i^{13} = 0 \quad \text{..... for } i \in (A \subset LARY) \cup (B \subset LARY)$$

$$\Delta M_i^{13} = 1.0\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{13} \quad \text{..... for } i \in LARY$$

$$\Delta M_i^{13} = .5\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{13} \text{ for } i \notin (LARY \cup A \cup B)$$

$$\Delta M_i^{14} = 0 \quad \text{..... for } i \in (A \cup B)$$

$$\Delta M_i^{14} = .5\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{14} \quad \text{.... for } i \notin (A \cup B)$$

IX: ALTPREF - Full cut to zero on alternative goods from LDCs, Tokyo 1 otherwise

$$\Delta M_i^{13} = 0 \quad \text{..... for } i \in (A \subset ALT) \cup (B \subset ALT)$$

$$\Delta M_i^{13} = 1.0\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M^{13} \quad \text{..... for } i \in ALT$$

$$\Delta M_i^{13} = .5\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{13} \text{ for } i \in (ALT \cup A \cup B)$$

$$\Delta M_i^{14} = 0 \quad \text{..... for } i \in (A \cup B)$$

$$\Delta M_i^{14} = .5\left[\frac{t_i}{(1+t_i)}\right] e_i \cdot M_i^{14} \quad \text{... for } i \notin (A \cup B)$$

SHARE FORMULAS

The problem of determining import flows due to a tariff cut by country or region of origin is even more difficult than global estimates. For an adequate estimation, one would require parameter estimates for supply elasticities in each region, as demonstrated theoretically for example in Blackhurst (1971) for only two origin regions — advanced and developing countries. In fact, if this were possible to do, the proper procedure would be to estimate all such flows in one step yielding a total import change for each good (our ΔM_i above) as a sum of import changes for each region (ΔM_i^j). The most common way around the quandary of import supply elasticities is either to ignore the question of supplying sources, or to assume no change in the existing shares by region that is, $\frac{\Delta M_i^j}{\Delta M_i} = \frac{M_i^j}{M_i}$. Few authors have attempted anything beyond this; the exceptions are Cline et al. (1976), and Baldwin and Murray (1977), who incorporate some relatively simple trade diversion effects.

Given the purpose of the present study, this issue cannot be ignored; at the very least, we wish to have some insight into the possible benefits to developing countries of any tariff cuts, and compare this with the benefits for advanced countries. As obtaining supply elasticities does not seem feasible, we have taken a different approach, namely, hypothesizing region shares for each product exogenously to reflect a range of likely outcomes from "least favourable" to "most favourable" from the viewpoint of the developing countries.

Let us define:

λ_i = share of all developing countries in Canadian imports of good i for the current period (1972-75).

$\bar{\lambda}_i$ = hypothesized share of developing countries for incremental imports of good i.

γ_{ij} = share of developing region j (j = ... 12) in Canadian imports of i from all developing countries for current period (1972-75).

α_{ij} = hypothesized share of region (including advanced countries) for incremental imports of good i.

The basic allocation equation for each region j, given a prior determination of the total import increment (ΔM_i) is therefore:

$$\Delta M_{ij} = \alpha_{ij} \cdot \Delta M_i \qquad \text{(E.1)}$$

Further, the hypothesized values for the α_{ij} share will be given by:

$$\alpha_{ij} = \delta_{ij} \cdot \lambda_i \qquad \text{(E.2)}$$

for j = the 12 LDC regions

and

$$\alpha_i 14 = 1 - \lambda_i \qquad \text{(E.3)}$$

for j = 14, the MDCs.

Specification of hypothesized share values for all LDCs (λ_i) is done by first dividing all goods into two groups—goods of special interest to developing countries and all others—and formulating three share formulas:

A Status-Quo—shares are maintained as in current period; this is regarded as the least favourable to developing countries in the sense that we assume they will do no worse. This seems not unreasonable given their current low overall share, and the expressed objective of NIEO to increase this.

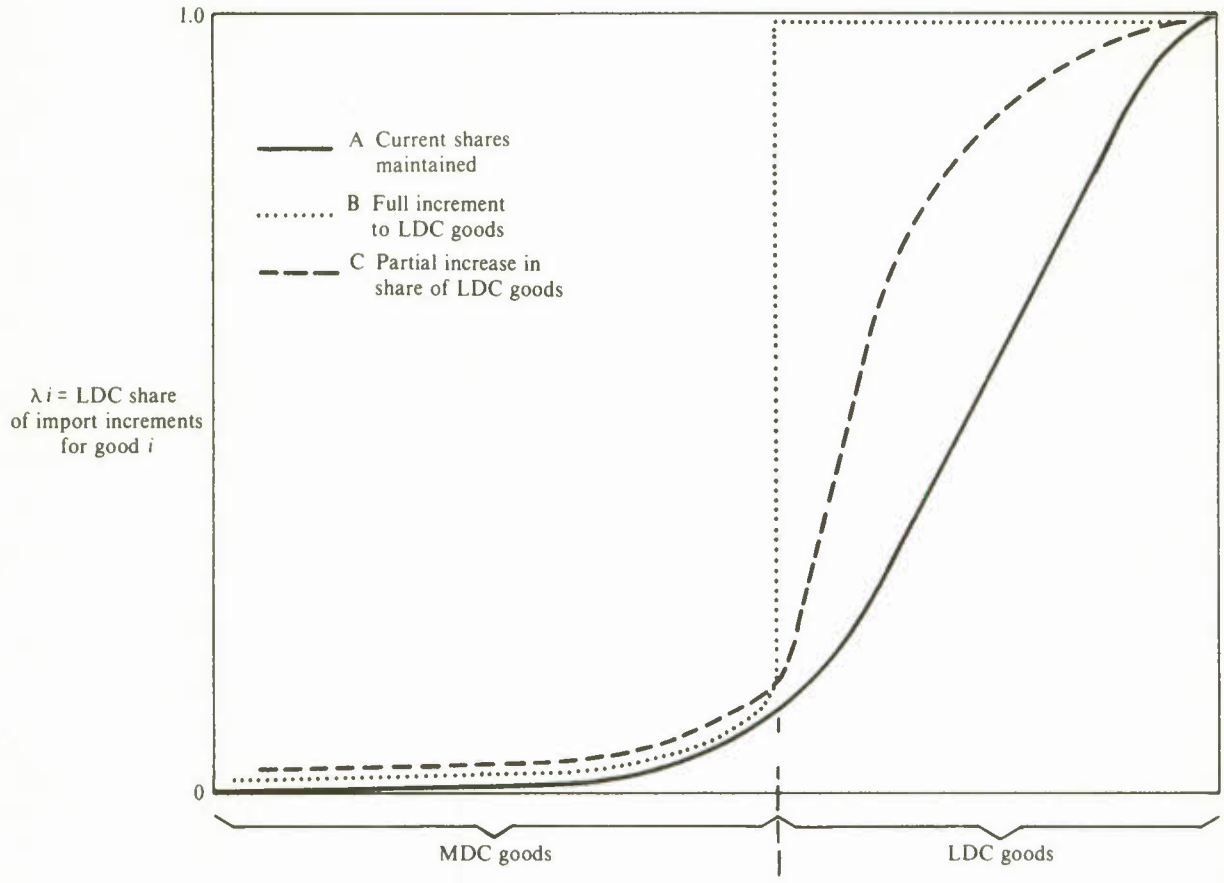
B Full Increment of Own Goods—for goods of special interest to developing countries, we assume the full increment ΔM_i goes to them, and current shares are used to distribute this among the twelve regions; for other goods, the status quo is assumed.

C Increased Share of Own Goods—for goods of special interest, developing countries increase their share by some formula, falling well short of attaining the full increment; the status quo remains for other goods.

A visual approximation of what these hypotheses signify is given in Figure E-1 and the rigorous algebraic specification for empirical estimates follows.

On the horizontal axis of Figure E-1, commodities i are ranked in ascending order of the developing countries' share in imports to Canada (λ_i), while the vertical axis shows the value of the share, and the solid line there represents the values of the current shares for the 1972-75 period. The list of "LDC goods" are defined as all goods above a cutoff level of (say) $\lambda_i = .10$ where the shares curve has a sharp discontinuity. Thus, all goods to the right of $i = g$ on Figure E-1 are LDC goods, while the others we may call MDC goods. Then we can represent the three formulas on sharing of import increments by curves on the diagram. This is, in brief form, a description of the procedure for delineating our "alternative list" to use along with the Lary list. Indeed, throughout the analysis sharing according to this "special-interest-goods" approach is done for both Lary goods and the alternative list.

FIGURE E-1
Growth in Market Shares of Goods Imported from Developing Countries after Tariff Cuts, Selected Formulas



Formula A: Status Quo is represented by the current shares solid line, or algebraically:

$$\bar{\lambda}_i^A = \lambda_i \qquad \text{(E.4)}$$

for all i.

Substituting into equations (E.2) and (E.3), this yields the shares of total increments of i under our allocation Formula A:

$$\alpha_{ij}^A = \gamma_{ij}\ \lambda_i \qquad \text{(E.5)}$$

for j = the 12 developing regions

$$\alpha_{i14}^A = 1-\lambda_i \quad \text{for region 14, LDC} \qquad \text{(E.6)}$$

for region 14, LDC

The actual import change values for each region are then computed by substituting these two equations into equation (E.1).

Formula B: Full Increment of LDC goods—is shown as the 000 line, following the current shares line for all MDC goods, and taking values of $\bar{\lambda}_i = 1.0$ for all LDC goods. Algebraically, we state this as:

$$\bar{\lambda}_i^B = \lambda_i \qquad \text{(E.7)}$$

for $i \in$ MDC list

$$\bar{\lambda}_i^B = 1.0 \qquad \text{(E.8)}$$

for $i \in$ LDC list

which again substituting into equations (E.2) and (E.3) yields:

$$\alpha_{ij}^B = \lambda_i \qquad \text{(E.9a)}$$

for $i \in$ MDC list

$$\alpha_{ij}^{B} = 1.0 \qquad \text{(E.9b)}$$

for $i \in$ LDC list

and for the advanced countries region

$$\alpha_{i14}^{B} = \lambda_i \qquad \text{(E.10a)}$$

for $i \in$ MDC list

$$\alpha_{i14}^{B} = 0 \qquad \text{(E.10b)}$$

for $i \in$ LDC list

Again, actual import values are compiled by substituting these four equations into equation (E.1).

Formula C: Partial Increase in LDC goods share—consists in fact of three variants: the first increasing λ_i value for LDC goods by 50 per cent (to a maximum of 1.0), the second doing so by 100 per cent, and the third by a percentage that increases levels from zero for goods with $\lambda_i = .1$ to 100 per cent where $\lambda_i = 0.5$, then decreases to a value of zero for goods with $\lambda_i = 1.0$. Let us call these in turn Formulas C, D, and E.

Define y_i as the percentage increase in the LDC share for good *i*, then

$$\bar{\lambda}_i^{C,D,E} = (1 + y_i^{C,D,E})\ \lambda_i \qquad \text{(E.11)}$$

and y_i takes values for each of the three shares of:

$$y_i^{C,D,E} = 0 \qquad \text{for } i \in \text{MDC} \qquad \text{(E.12)}$$

$$y_i^{C} = .5 \qquad \text{for } i \in \text{LDC} \qquad \text{(E.13)}$$

$$y_i^{D} = 1.0 \qquad \text{(E.14)}$$

$$y_i^{E} = \lambda_i \qquad \text{for } \lambda_i - .5 \qquad \text{(E.15)}$$

$$y_i^{E} = 1.0 - \lambda_i \text{ for } \lambda i\ 7.5 \qquad \text{(E.16)}$$

At this point, substitution to derive a specification of the share-by-region equation becomes awkward though algebraically and intuitively still quite simple. Therefore, we note only that for each of these three formulas (C,D,E), the actual shares for each region (α_i^C, α_{ij}^D, α_{ij}^E) are obtained by substituting the appropriate equations from among (E.12) to (E.16) into (E.11) to obtain the $\bar{\lambda}_i$ values, then into (E.2) and (E.3) to obtain the shares by region (α_{ij}), and finally into equation (E.1) to yield values for the change in imports by region of origin, as for the other hypotheses.

F Tariff Height Estimates by Region and by Product Category: Canada and EEC

TABLE F-1
Tariff Height by Region and Category, Canada, 1972-75

SITC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	8.28	4.50	23.04	0.66	17.00	2.92	1.09	0.67	4.26	17.26	2.95	3.33	11.12	6.70	7.76
1	22.64	23.60	12.19	17.28	24.31	6.43	17.28	0.00	8.79	19.58	24.14	17.22	18.00	13.41	13.89
0+1	8.47	4.63	22.73	0.66	17.01	3.47	1.09	0.67	4.62	17.58	3.04	3.48	11.34	7.26	8.19
2	0.66	0.50	1.03	0.06	0.06	0.15	0.00	1.37	0.88	0.00	0.12	0.17	0.27	0.94	0.84
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	8.60	8.60	13.50	8.60	8.44	8.60	8.60	8.44	8.60	12.87	8.44	8.22	8.57	8.01	8.17
(0–4)	4.41	4.44	20.88	0.96	13.49	1.46	0.53	1.00	1.23	7.57	2.94	1.25	2.89	4.33	3.67
5	9.77	8.97	6.29	9.00	0.60	14.87	8.07	8.00	8.95	11.87	18.71	7.36	8.76	9.10	9.10
6	15.46	10.20	2.05	2.64	3.02	21.04	7.15	17.05	4.86	1.44	8.39	7.47	9.33	10.72	10.64
7	11.53	12.52	5.78	7.22	8.76	7.98	5.10	5.79	7.59	8.00	10.07	5.29	10.05	4.96	5.01
8	23.15	23.86	9.95	14.87	20.24	25.39	16.69	17.65	23.64	20.76	22.70	22.23	23.30	12.55	13.85
5–8	19.59	16.26	2.92	2.75	3.45	24.40	7.34	17.02	9.95	7.51	12.40	9.89	15.45	7.17	7.43
(0–8)	17.09	13.24	17.25	0.26	12.65	3.52	0.70	0.01	2.04	10.06	3.53	1.75	5.03	6.70	6.49
Stage 1	1.43	1.12	1.28	0.09	0.20	0.26	0.06	0.00	0.03	0.69	1.13	0.07	0.09	1.46	0.76
Stage 2	9.58	7.22	2.21	3.57	2.75	8.31	5.82	1.59	4.50	7.90	7.70	7.59	7.31	8.46	8.37
Stage 3	19.79	18.23	23.22	0.67	17.51	16.09	1.08	13.68	15.70	19.59	7.55	7.76	17.07	6.85	7.32

TABLE F-2
Tariff Height by Region and by Selected Product Category, Canada, first row 1967-71, second row 1972-75

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
						All goods								
17.19	4.16	12.49	0.92	8.25	6.23	2.17	0.10	9.50	5.99	1.88	1.87	5.34	6.48	6.37
17.09	13.24	17.25	0.26	12.65	3.52	0.70	0.01	2.04	10.06	3.53	1.75	5.03	6.70	6.49
						All excluding petroleum								
17.19	4.16	12.49	1.99	6.77	6.23	2.17	4.49	9.50	6.16	1.88	4.78	8.12	6.48	6.58
17.09	13.24	17.25	1.09	15.65	7.96	0.87	4.82	8.28	10.32	3.53	5.64	11.44	6.71	6.99
						Lary								
19.39	5.54	8.76	1.06	3.59	16.19	6.77	4.51	18.05	11.72	10.87	9.97	15.37	8.46	8.73
19.51	16.97	10.03	1.11	3.61	22.22	6.28	5.74	17.28	11.31	11.08	11.90	16.88	8.54	8.96
						All excluding Lary								
1.51	3.19	12.92	0.92	8.44	1.98	0.94	0.02	1.84	5.87	1.81	1.50	2.99	4.64	4.41
2.80	3.25	17.72	0.25	13.14	1.35	0.40	0.00	0.33	10.01	3.08	0.87	2.44	5.00	4.52
						Alternative								
19.57	5.37	16.60	6.02	11.25	16.91	4.02	4.66	11.21	11.19	3.72	6.46	11.67	14.96	14.01
19.93	15.42	20.33	3.20	18.33	16.07	3.07	5.14	9.90	13.70	7.62	8.09	15.05	15.07	15.07
						All excluding alternative								
5.27	1.89	2.56	0.21	0.10	2.98	0.89	0.02	7.83	0.39	1.12	0.26	0.69	5.44	5.13
6.15	4.96	3.25	0.16	0.24	0.90	0.07	0.00	0.80	1.12	1.34	0.37	0.56	5.56	5.05

TABLE F-3
Tariff Height by Region and Category, European Economic Community, 1972-75

SITC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	8.07	9.44	8.71	5.87	6.74	9.09	8.74	10.75	8.65	5.60	10.59	6.45	7.69	5.28	5.89
1	23.82	23.35	23.91	24.79	23.25	29.14	33.75	35.58	24.36	42.28	25.97	23.73	27.02	34.77	33.63
0+1	10.94	10.75	9.33	5.88	8.44	11.13	9.15	10.91	9.92	9.44	10.62	6.95	8.75	8.24	8.36
2	0.27	0.25	0.24	0.02	0.29	0.15	0.06	0.26	0.58	0.20	0.33	0.20	0.20	1.22	0.95
3	3.27	3.06	3.51	0.01	1.42	0.17	0.16	0.08	1.05	5.45	4.54	1.14	0.16	4.08	1.08
4	9.18	9.25	3.70	9.17	8.47	8.97	9.15	8.94	9.02	1.58	6.56	7.06	8.54	7.44	7.85
(0–4)	4.73	5.65	4.71	0.63	5.32	2.31	4.26	0.10	4.63	8.02	8.87	4.14	1.91	5.26	3.74
5	11.30	8.16	6.52	10.71	9.03	6.73	4.36	8.60	6.28	8.78	8.50	8.77	7.94	11.06	10.97
6	9.81	7.02	0.86	3.66	0.15	9.61	7.87	11.44	5.71	2.96	7.64	2.28	3.95	6.64	6.37
7	10.89	10.15	7.62	2.40	7.81	7.42	7.24	6.97	6.09	8.31	0.82	8.60	8.89	8.33	8.34
8	15.29	15.31	12.28	8.01	14.44	16.20	14.59	9.62	12.79	11.69	12.05	12.66	15.03	12.07	12.38
5–8	13.64	9.61	1.75	3.64	0.49	10.81	7.31	10.53	7.44	7.65	3.53	4.01	7.45	8.66	8.58
(0–8)	11.85	7.37	3.80	0.73	2.74	2.91	4.40	0.24	5.31	7.84	8.52	4.11	2.75	7.53	6.43
Stage 1	4.07	5.60	3.25	0.47	3.78	0.88	2.27	0.01	3.09	9.11	8.87	2.89	0.94	3.02	1.87
Stage 2	6.95	4.16	1.12	3.67	0.52	6.90	6.10	5.63	5.83	6.45	3.92	2.74	3.57	6.56	6.23
Stage 3	14.22	13.62	13.13	4.45	7.58	18.20	10.96	11.35	12.43	8.17	8.60	9.34	11.74	9.97	10.10

TABLE F-4
Tariff Height by Region and by Selected Product Category, European Economic Community, first row 1967-71, Second row 1972-75

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
								All goods							
	11.80	5.36	3.36	1.67	2.23	4.11	4.40	0.30	4.65	8.35	9.75	3.29	3.11	7.27	6.30
	11.85	7.37	3.80	0.73	2.74	2.91	4.40	0.24	5.31	7.84	8.52	4.11	2.75	7.53	6.43
								All excluding petroleum							
	11.91	5.37	3.36	2.43	2.25	8.65	4.49	6.33	5.50	8.55	9.75	3.59	4.97	7.21	6.85
	11.87	7.39	3.80	2.61	2.77	6.98	4.97	7.08	6.61	7.92	8.52	4.42	5.94	7.58	7.38
								Lary							
	15.05	8.85	13.23	4.43	6.10	14.60	9.17	12.76	12.63	20.40	3.89	3.47	11.30	9.72	9.84
	14.00	11.07	15.40	4.44	7.99	14.88	10.32	12.66	12.10	18.91	5.28	7.02	12.01	9.95	10.11
								All excluding Lary							
	3.42	4.28	2.10	1.60	2.18	3.42	4.08	0.09	3.50	7.62	9.97	3.28	2.28	5.97	4.88
	3.86	4.51	2.44	0.67	2.60	1.91	3.94	0.11	3.54	7.14	8.62	3.78	1.66	6.19	4.87
								Alternative							
	14.64	7.43	3.45	3.27	1.75	14.52	8.68	10.31	8.11	7.65	10.89	4.49	6.28	10.38	9.14
	14.00	9.99	4.72	5.23	2.18	13.64	9.36	8.89	9.48	7.46	9.22	6.21	8.20	10.56	10.00
								All excluding alternative							
	4.19	4.52	3.30	1.39	3.31	3.59	2.71	0.04	3.76	8.96	8.51	2.65	2.02	6.60	5.61
	5.30	4.99	3.36	0.53	3.76	2.01	2.53	0.04	3.93	8.27	7.83	3.06	1.36	6.81	5.58

G Percentage Import Increase by Region and by Category

The tables in this appendix are arranged in order of tariff cut hypothesis (I to IX), and under each of these, in order of the share formula (A to E Alt). Each complete table, headed by a label such as TOKYO 1 I-A, thus represents the detailed background data by regions and by goods categories for one of the cells in Table 7-3. Full name labels for rows and columns are not given in each table; rather numbers are used, as follows: 1 East Asia; 2 Rest of Asia; 3 South Africa; 4 West Africa; 5 East Africa; 6 Maghreb; 7 Other Francophone African countries; 8 Oil producing Middle East countries; 9 Other Middle East countries; 10 Caribbean; 11 Central America; 12 LAFTA; 13 LDC; 14 MDC; 15 world; followed by a column showing the total import to Canada by category in thousands of dollars.

TABLE G-1
TOKYO 1

I-A

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0 Food and Live Animals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1 Beverages and Tobacco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2 Inedible Materials	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3 Fuels	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4 Animal and Veg. Oils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5 Chemicals	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.7	7.7	3.1	4.2	5.0	5.0	73,477.
6 Manuf. by Material	5.4	3.1	0.9	1.9	0.3	4.5	2.6	0.5	0.8	0.2	0.8	1.7	2.8	6.4	6.1	246,556.
7 Mach. & Trans. Equip.	0.2	11.3	8.4	7.1	8.1	6.7	9.8	10.1	7.1	8.4	9.6	5.9	9.4	5.5	5.6	690,792.
8 Misc. Manuf.	6.3	6.4	6.3	5.8	7.2	5.9	5.3	11.6	4.6	8.3	2.2	9.5	6.6	8.7	8.5	197,653.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	Food, Bev. & Tob.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	Fuels	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	Inedible Materials	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4		0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.1	0.1	0.2	0.2	8,995.
5-8	Manufactures	6.8	5.9	1.8	1.9	0.8	5.7	3.0	0.9	2.8	2.9	2.4	4.6	5.6	6.0	6.0	1,208,479.
2-8	Non Food Items	6.2	5.0	1.3	0.1	0.2	1.1	0.2	0.0	0.6	1.8	1.9	0.6	1.4	5.6	5.1	1,217,474.
0-8	All Goods	5.8	4.4	0.4	0.1	0.0	0.9	0.2	0.0	0.5	1.1	0.2	0.6	1.2	5.2	4.7	1,217,474.
ST1	Materials	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	Semi-Finished	2.1	1.5	0.9	1.3	0.0	2.4	1.4	0.3	0.8	2.3	1.3	1.9	1.7	3.9	3.7	185,009.
ST3	Semi-Finished	7.0	6.8	0.2	0.1	0.1	4.1	0.3	0.7	4.5	0.5	0.3	3.2	4.2	6.2	6.1	1,029,227.
LRY	Lary List	6.5	5.8	2.3	0.5	0.5	4.8	2.2	0.2	3.8	2.7	1.0	4.1	5.6	6.7	6.7	775,453.
AL3	Alternative List	6.1	4.8	0.1	0.3	0.0	4.0	0.7	0.3	1.9	1.4	0.2	2.0	3.1	7.1	6.0	228,821.

I-B LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.2	6.2	2.2	2.0	0.1	9.5	0.0	0.0	5.0	7.0	8.5	3.6	5.0	5.0	5.0	73,477.
6	143.4	52.2	32.9	4.0	3.0	94.1	24.5	4.5	35.6	9.1	20.4	39.0	62.4	2.6	6.1	246,556.
7	208.7	298.2	1,185.8	48.1	39.4	524.1	34.1	10.1	1,173.6	822.9	730.4	716.7	407.9	1.9	5.6	690,792.
8	54.7	58.3	144.0	230.4	200.2	38.0	93.4	153.1	61.9	184.9	36.4	78.5	59.0	1.3	8.5	195,653.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.9	0.0	0.2	0.1	0.2	0.2	8,995.
5-8	96.9	94.8	122.3	4.9	7.8	47.1	27.0	9.0	169.1	58.9	29.5	227.5	118.6	2.2	6.0	1,208,479.
2-8	88.2	81.0	90.8	0.2	1.6	7.4	1.5	0.0	33.9	7.6	17.8	24.1	27.4	2.1	5.1	1,217,474.
0-8	81.6	70.9	23.9	0.1	0.4	6.0	1.2	0.0	32.0	4.6	1.6	21.6	23.3	1.9	4.7	1,217,474.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	23.2	16.9	20.8	2.5	0.1	14.9	9.6	0.8	25.0	2.8	6.8	10.2	13.4	2.8	3.7	185,009.
ST3	100.4	112.4	27.5	1.5	0.6	24.1	2.6	6.1	278.5	10.2	3.8	174.5	90.3	1.9	6.1	1,029,227.
LRY	94.9	96.9	389.3	25.3	8.0	41.4	22.7	2.7	287.7	97.6	25.9	262.5	127.1	0.0	6.7	775,453.
AL3	41.2	41.3	0.4	0.4	0.4	13.1	4.9	1.2	19.5	2.9	0.9	10.4	21.8	0.1	6.0	228,821.

I-B ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	7.1	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	4.1	3.2	0.2	0.2	0.1	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.4	2.0	0.1	9.5	0.0	0.0	5.0	15.6	8.3	6.5	7.6	5.0	5.0	73,477.
6	26.4	15.1	2.3	2.1	2.9	37.8	23.4	2.1	1.5	0.6	5.5	6.2	13.0	5.7	6.1	246,556.
7	85.3	135.2	13.3	2.1	33.9	75.0	34.1	10.1	88.4	36.3	33.2	39.1	88.5	4.8	5.6	690,792.
8	32.1	38.4	16.4	11.9	58.7	18.4	24.3	53.4	22.5	108.8	7.4	34.2	34.6	4.8	8.5	197,653.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	7.1	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	4.1	3.2	0.2	0.2	0.1	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.6	0.1	0.2	0.2	0.1	0.2	8,995.
5-8	39.6	44.6	3.5	2.1	5.2	21.4	23.8	3.7	17.4	22.6	6.7	21.2	35.3	5.0	6.0	1,208,479.
2-8	36.0	38.1	2.6	0.1	1.1	3.6	1.3	0.0	3.5	4.8	4.5	2.4	8.3	4.6	5.1	1,217,474.
0-8	33.3	33.4	0.7	0.1	0.3	2.9	1.1	0.0	3.3	2.9	0.4	2.2	7.1	4.3	4.7	1,217,474.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	8.9	4.5	1.9	1.4	0.2	6.7	9.9	0.4	1.0	3.9	4.4	3.4	4.4	3.6	3.7	185,009.
ST3	41.1	55.3	0.4	0.2	0.4	11.9	1.5	2.8	30.4	4.1	0.6	15.4	27.2	4.9	6.1	1,029,227.
LRY	34.2	45.4	6.4	2.0	5.1	18.5	19.6	1.1	28.6	30.8	4.8	23.0	37.2	5.0	6.7	775,453.
AL3	41.5	41.4	0.5	0.5	0.4	13.5	5.0	1.2	19.5	4.1	0.9	10.7	22.1	0.0	6.0	228,821.

TABLE G-1 CONT'D

I-C LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.8	7.7	3.1	4.2	5.0	5.0	73,477.
6	10.5	5.8	1.4	1.9	0.6	7.7	5.2	0.8	1.1	0.3	1.6	2.8	5.2	6.2	6.1	246,556.
7	19.8	22.4	12.0	7.3	10.6	12.0	10.7	10.1	13.4	15.3	17.1	10.1	17.8	5.5	5.6	690,792.
8	12.7	12.8	9.3	10.6	13.6	11.8	9.3	22.4	9.2	16.5	4.4	18.3	13.1	7.8	8.5	197,653.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.9	0.0	0.1	0.1	0.2	0.2	8,995.
5-8	13.4	11.5	2.5	2.0	1.3	11.2	5.5	1.5	5.0	4.5	3.4	8.2	10.8	5.8	6.0	1,208,479.
2-8	12.2	9.8	1.9	0.1	0.3	2.0	0.3	0.0	1.0	1.9	2.5	1.0	2.6	5.4	5.1	1,217,474.
0-8	11.3	8.6	0.5	0.1	0.1	1.6	0.3	0.0	1.0	1.2	0.2	0.9	2.2	5.0	4.7	1,217,474.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238
ST2	3.8	2.7	1.2	1.3	0.0	2.6	2.4	0.4	0.9	2.4	1.8	2.2	2.4	3.8	3.7	185,009.
ST3	13.7	13.2	0.4	0.1	0.1	7.1	0.4	1.0	8.0	0.7	0.4	5.8	8.0	5.9	6.1	1,029,227.
LRY	12.9	11.6	4.6	1.0	1.1	9.7	4.4	0.4	7.5	5.4	1.9	8.3	11.2	6.4	6.7	775,453.
AL3	12.3	9.6	0.1	0.3	0.1	7.0	1.2	0.5	3.7	1.5	0.3	3.3	6.0	6.1	6.0	228,821.

I-C ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.8	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.1	3.2	0.2	0.2	0.3	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.3	2.0	0.1	9.5	0.0	0.0	5.0	7.5	7.8	3.6	5.0	5.0	5.0	73,477.
6	9.0	5.4	1.2	1.9	0.6	7.2	5.2	0.7	0.9	0.2	1.5	2.4	4.6	6.2	6.1	246,556.
7	19.0	21.6	8.6	7.1	10.5	9.3	10.7	10.1	10.2	10.4	12.6	7.7	16.6	5.5	5.6	690,792.
8	11.9	12.2	7.6	6.7	12.0	11.5	8.7	19.2	8.6	15.6	3.2	17.3	12.4	7.9	8.5	197,653.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.8	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.1	3.2	0.2	0.2	0.3	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.2	0.1	0.2	0.2	0.1	0.2	8,995.
5-8	12.5	10.9	2.0	2.0	1.3	10.8	5.5	1.3	4.4	5.0	3.1	7.1	10.1	5.8	6.0	1,208,479.
2-8	11.4	9.4	1.5	0.1	0.3	2.0	0.3	0.0	0.9	2.4	2.4	0.9	2.5	5.4	5.1	1,217,474.
0-8	10.5	8.2	0.4	0.1	0.1	1.6	0.3	0.0	0.8	1.5	0.2	0.8	2.1	5.0	4.7	1,217,474.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	3.7	2.6	1.1	1.4	0.0	3.2	2.5	0.4	0.8	3.0	1.9	2.4	2.6	3.8	3.7	185,009.
ST3	12.8	12.5	0.3	0.1	0.1	6.9	0.4	0.9	7.0	0.8	0.4	5.0	7.4	5.9	6.1	1,029,227.
LRY	12.0	11.0	2.7	0.7	1.0	9.4	4.3	0.3	6.4	4.8	1.6	7.1	10.4	6.5	6.7	775,453.
AL3	12.3	9.6	0.1	0.4	0.1	7.3	1.2	0.5	3.7	2.0	0.4	3.5	6.1	6.0	6.0	228,821.

I—D LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.6	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.7	7.7	3.1	4.2	5.0	5.0	73,477.
6	8.0	4.4	1.2	1.9	0.5	6.1	3.9	0.6	1.0	0.3	1.2	2.2	4.0	6.3	6.1	246,556.
7	15.0	16.9	10.2	7.2	9.3	9.3	10.2	10.1	10.2	11.8	13.4	8.0	13.6	5.5	5.6	690,792.
8	9.5	9.6	7.8	8.2	10.4	8.8	7.3	17.0	6.9	12.4	3.3	13.9	9.8	8.3	8.5	197,653.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.9	0.0	0.1	0.1	0.2	0.2	8,995.
5-8	10.1	8.7	2.1	2.0	1.1	8.4	4.2	1.2	3.9	3.7	2.9	6.4	8.2	5.9	6.0	1,208,479.
2-8	9.2	7.4	1.6	0.1	0.2	1.5	0.3	0.0	0.8	1.8	2.2	0.8	2.0	5.5	5.1	1,217,474.
0-8	8.5	6.5	0.4	0.1	0.1	1.2	0.2	0.0	0.7	1.1	0.2	0.7	1.7	5.0	4.7	1,217,474.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	2.9	2.1	1.0	1.3	0.0	2.5	1.9	0.3	0.8	2.3	1.6	2.0	2.1	3.9	3.7	185,009.
ST3	10.3	9.9	0.3	0.1	0.1	5.3	0.3	0.7	6.2	0.6	0.4	4.4	6.0	6.0	6.1	1,029,227.
LRY	9.7	8.7	3.5	0.7	0.8	7.2	3.3	0.3	5.7	4.0	1.4	6.2	8.4	6.6	6.7	775,453.
AL3	9.2	7.2	0.1	0.3	0.1	5.5	0.9	0.4	2.8	1.5	0.3	2.7	4.6	6.6	6.0	228,821.

TABLE G-1 CONT'D

I-D ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.7	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.0	3.2	0.2	0.2	0.3	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.3	2.0	0.1	9.5	0.0	0.0	5.0	6.1	7.8	3.4	4.6	5.0	5.0	73,477.
6	7.2	4.2	1.1	1.9	0.5	5.8	3.9	0.6	0.8	0.2	1.2	2.0	3.7	6.3	6.1	246,556.
7	14.6	16.5	8.5	7.1	9.3	8.0	10.2	10.1	8.7	9.4	11.1	6.8	13.0	5.5	5.6	690,792.
8	9.1	9.3	7.0	6.2	9.6	8.7	7.0	15.4	6.6	12.0	2.7	13.4	9.5	8.3	8.5	197,653.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.7	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.0	3.2	0.2	0.2	0.3	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.2	0.1	0.2	0.2	0.1	0.2	8,995.
5–8	9.7	8.4	1.9	2.0	1.1	8.3	4.2	1.1	3.6	4.0	2.7	5.9	7.9	5.9	6.0	1,208,479.
2–8	8.8	7.2	1.4	0.1	0.2	1.6	0.3	0.0	0.7	2.2	2.2	0.8	2.0	5.5	5.1	1,217,474.
0–8	8.1	6.3	0.4	0.1	0.1	1.3	0.2	0.0	0.7	1.4	0.2	0.7	1.7	5.0	4.7	1,217,474.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	2.9	2.0	1.0	1.4	0.0	3.1	2.0	0.4	0.8	2.9	1.7	2.3	2.2	3.8	3.7	185,009.
ST3	9.9	9.6	0.2	0.1	0.1	5.2	0.3	0.7	5.6	0.6	0.3	4.1	5.8	6.0	6.1	1,029,227.
LRY	9.2	8.4	2.5	0.6	0.8	7.1	3.2	0.3	5.1	3.7	1.3	5.6	8.0	6.6	6.7	775,453.
AL3	9.2	7.2	0.1	0.3	0.1	5.8	1.0	0.5	2.8	1.8	0.3	2.9	4.6	6.6	6.0	228,821.

I-E LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.7	7.7	3.1	4.2	5.0	5.0	73,477.
6	6.2	3.6	0.9	1.9	0.4	4.8	2.9	0.5	0.8	0.2	0.9	1.8	3.2	6.3	6.1	246,556.
7	11.6	12.4	8.4	7.1	8.3	6.8	9.8	10.1	7.2	8.6	10.1	6.0	10.3	5.5	5.6	690,792.
8	7.7	7.7	6.6	6.1	7.7	7.8	6.0	13.2	5.7	8.9	2.5	11.7	8.0	8.5	8.5	197,653.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.1	0.1	0.2	0.2	8,995.
5–8	8.0	6.8	1.8	1.9	0.9	7.3	3.3	1.0	3.2	3.1	2.5	5.2	6.6	6.0	6.0	1,208,479.
2–8	7.3	5.9	1.4	0.1	0.2	1.4	0.2	0.0	0.6	1.8	2.0	0.7	1.6	5.6	5.1	1,217,474.
0–8	6.9	5.2	0.4	0.1	0.0	1.1	0.2	0.0	0.6	1.1	0.2	0.6	1.4	5.2		1,217,474.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	2.5	1.8	0.9	1.3	0.0	2.4	1.5	0.3	0.8	2.3	1.4	1.9	1.9	3.9	3.7	185,009.
ST3	8.3	7.8	0.2	0.1	0.1	5.3	0.3	0.8	5.1	0.5	0.3	3.6	4.8	6.1	6.1	1,029,227.
LRY	7.7	6.8	2.4	0.5	0.6	6.3	2.4	0.2	4.4	2.9	1.1	4.8	6.6	6.7	6.7	775,453.
AL3	7.4	5.7	0.1	0.3	0.0	5.0	0.7	0.4	2.3	1.4	0.2	2.3	3.7	6.9	6.0	228,821.

I—E ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	2.8	3.1	0.2	0.2	0.4	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	5.3	7.7	3.2	4.4	5.0	5.0	73,477.
6	6.2	3.6	1.0	1.9	0.4	4.8	2.9	0.5	0.8	0.2	0.9	1.8	3.2	6.3	6.1	246,556.
7	11.6	12.4	8.4	7.1	8.3.	6.8	9.8	10.1	7.2	8.5	10.1	6.0	10.3	5.5	5.6	690,792.
8	7.6	7.7	6.5	6.0	7.7	7.8	6.0	13.0	5.7	8.9	2.4	11.6	7.9	8.5	8.5	197,653.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	2.8	3.1	0.2	0.2	0.4	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.1	0.1	0.2	0.1	0.2	0.2	8,995.
5–8	8.0	6.8	1.8	1.9	0.9	7.3	3.3	0.9	3.2	3.2	2.5	5.2	6.5	6.0	6.0	1,208,479.
2–8	7.3	5.8	1.4	0.1	0.2	1.4	0.2	0.0	0.6	2.1	2.0	0.7	1.6	5.5	5.1	1,217,474.
0–8	6.8	5.2	0.4	0.1	0.0	1.2	0.2	0.0	0.6	1.3	0.2	0.6	1.4	5.2	4.7	1,217,474.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	2.5	1.8	0.9	1.4	0.0	2.9	1.6	0.4	0.8	2.8	1.5	2.2	2.1	3.9	3.7	185,009.
ST3	8.2	7.8	0.2	0.1	0.1	5.3	0.3	0.8	5.1	0.5	0.3	3.6	4.8	6.1	6.1	1,029,227.
LRY	7.6	6.8	2.4	0.5	0.6	6.3	2.4	0.2	4.3	2.9	1.1	4.8	6.6	6.7	6.7	775,453.
AL3	7.4	5.7	0.1	0.3	0.0	5.2	0.7	0.4	2.3	1.7	0.3	2.5	3.8	6.9	6.0	228,821.

TABLE G-2
TOKYO 2

II-A

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.7	7.7	3.1	4.2	5.0	5.0	73,477
6	9.0	5.4	1.2	1.9	1.7	16.9	2.6	14.1	2.2	0.8	3.9	4.7	5.3	8.4	8.2	328,852.
7	10.2	11.3	8.4	7.1	8.1	6.7	9.8	10.1	7.1	8.4	9.6	5.9	9.4	5.5	5.6	690,792.
8	26.0	25.0	8.0	9.2	23.0	22.6	16.9	17.8	23.9	25.8	27.1	21.0	25.1	11.6	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.1	0.1	0.2	0.2	8,995.
5-8	20.0	14.7	2.0	1.9	2.3	21.7	3.3	14.2	9.1	6.0	9.6	8.5	14.7	6.7	6.9	1,403,139.
2-8	18.2	12.6	1.5	0.1	0.5	3.5	0.2	0.0	1.8	2.1	6.1	1.0	3.5	6.2	5.9	1,412,134.
0-8	17.0	11.1	0.4	0.1	0.1	2.9	0.2	0.0	1.7	1.3	0.5	0.9	3.0	5.8	5.4	1,412,134.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	4.0	2.5	1.1	1.3	1.3	2.4	1.4	0.3	1.9	2.4	3.0	3.0	2.7	5.1	4.9	242,914.
ST3	21.2	17.8	0.3	0.1	0.1	16.0	0.4	15.7	15.1	1.0	1.3	5.3	11.2	6.7	6.9	1,165,983.
LRY	19.4	14.8	2.9	0.6	2.2	18.9	2.5	4.4	14.4	7.8	7.6	8.6	15.3	7.9	8.3	969,331.
AL3	20.3	13.0	0.1	0.3	0.2	12.9	0.7	3.6	8.9	1.7	1.3	4.0	8.8	10.7	10.2	387,236.

II-B LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.2	6.2	2.2	2.0	0.1	9.5	0.0	0.0	5.0	7.0	8.5	3.6	5.0	5.0	5.0	73,477.
6	196.6	89.9	37.2	4.0	6.5	453.4	24.6	169.2	71.2	13.7	61.5	66.4	96.7	2.6	8.2	328,852.
7	209.7	298.2	1,185.8	48.1	39.4	524.1	34.1	10.1	1,173.6	822.9	730.4	716.7	407.9	1.9	5.6	690,792.
8	95.9	95.0	148.2	238.3	228.2	70.6	130.7	180.9	109.1	238.9	94.9	107.8	97.9	1.3	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.3	0.3	3,420.
0+4	0.1	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.2	0.1	0.2	0.2	8,995.
5-8	133.4	125.5	125.9	4.9	11.3	127.6	28.3	168.9	201.8	69.7	66.7	246.5	148.1	2.2	6.9	1,403,139.
2-8	121.4	107.3	93.4	0.2	2.4	19.6	1.5	0.1	40.5	8.7	39.7	26.1	34.2	2.1	5.9	1,412,134.
0-8	113.5	94.7	24.7	0.1	0.6	16.1	1.3	0.1	38.4	5.4	3.6	23.4	29.2	1.9	5.4	1,412,134.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	56.4	34.5	23.9	2.5	3.1	15.0	9.6	0.8	50.9	2.9	29.6	19.4	26.7	2.8	4.9	242,914.
ST3	133.4	142.4	27.9	2.1	0.7	87.5	3.3	187.7	323.7	12.5	6.6	184.4	109.1	1.9	6.9	1,165,983.
LRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3	969,331.
AL3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2	387,236.

II-B ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	7.1	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	4.1	3.2	0.2	0.2	0.1	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.4	2.0	0.1	9.5	0.0	0.0	5.0	15.6	8.3	6.5	7.6	5.0	5.0	73,477.
6	68.3	33.0	5.4	2.1	6.2	57.7	23.5	21.3	9.3	2.5	45.0	23.4	33.2	6.6	8.2	328,852.
7	85.3	135.2	13.3	7.1	33.9	75.0	34.1	10.1	88.4	36.3	33.2	39.1	88.5	4.8	5.6	690,792.
8	73.0	74.5	20.6	19.8	86.7	51.0	61.6	81.2	69.7	162.8	65.9	63.1	73.1	4.8	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	7.1	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	4.1	3.2	0.2	0.2	0.1	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.6	0.1	0.2	0.2	0.1	0.2	8,995.
5-8	73.7	67.2	6.0	2.1	8.5	52.0	25.1	23.1	34.9	32.0	43.0	35.5	59.6	5.2	6.9	1,403,139.
2-8	67.0	57.4	4.5	0.1	1.8	8.2	1.4	0.0	7.0	5.8	25.9	3.9	13.9	4.8	5.9	1,412,134.
0-8	62.7	50.7	1.2	0.1	0.5	6.8	1.1	0.0	6.6	3.6	2.3	3.5	11.9	4.5	5.4	1,412,134.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	35.3	13.5	4.3	1.4	3.2	6.7	9.9	0.4	7.1	4.0	26.3	9.8	12.9	4.1	4.9	242,914.
ST3	72.6	79.7	0.5	0.3	0.4	36.5	2.0	25.6	58.1	5.9	3.2	21.5	43.2	5.1	6.9	1,165,983.
LRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
AL3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.

TABLE G-2 CONT'D

II-C LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.8	7.7	3.1	4.2	5.0	5.0	73,477.
6	17.6	10.4	1.8	1.9	3.5	29.6	5.2	21.9	4.1	1.6	7.8	8.8	10.1	8.1	8.2	328,852.
7	19.8	22.4	12.0	7.3	10.6	12.0	10.7	10.1	13.4	15.3	17.1	10.1	17.8	5.5	5.6	690,792.
8	48.6	46.0	12.5	17.2	41.0	41.4	32.0	34.7	43.6	51.5	53.1	40.7	46.9	8.5	13.3	310,017.

	1	2	3	4	5	6	7	8	9	11	12	13	14	15		
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.1	0.1	0.2	0.2	8,995.
5-8	37.6	27.4	2.9	2.0	4.3	39.6	6.2	22.3	16.3	10.6	17.7	15.8	27.5	6.2	6.9	1,403,139.
2-8	34.2	23.5	2.2	0.1	0.9	6.2	0.4	0.0	3.3	2.6	10.9	1.8	6.4	5.8	5.9	1,412,134.
0-8	32.0	20.7	0.6	0.1	0.2	5.2	0.3	0.0	3.1	1.6	1.0	1.6	5.5	5.4	5.4	1,412,134.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	7.7	4.7	1.5	1.3	2.7	2.6	2.4	0.4	3.2	2.4	5.1	4.4	4.4	4.9	4.9	242,914.
ST3	39.8	33.1	0.4	0.2	0.1	29.2	0.7	24.7	27.3	1.8	2.3	10.0	20.9	6.2	6.9	1,165,983.
LRY	36.7	27.9	5.9	1.1	4.2	34.7	5.0	6.9	26.8	15.7	15.0	17.1	29.1	7.2	8.3	969,331.
AL3	38.3	24.3	0.2	0.3	0.3	22.6	1.3	5.2	16.3	2.1	2.4	7.2	16.4	7.9	10.2	387,236.

II-C ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.8	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.1	3.2	0.2	0.2	0.3	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.3	2.0	0.1	9.5	0.0	0.0	5.0	7.5	7.8	3.6	5.0	5.0	5.0	73,477.
6	15.9	9.5	1.6	1.9	3.5	23.1	5.2	19.3	2.9	1.4	7.6	8.1	9.1	8.1	8.2	328,852.
7	19.0	21.6	8.6	7.1	10.5	9.3	10.7	10.1	10.2	10.4	12.6	7.7	16.6	5.5	5.6	690,792.
8	47.8	45.1	10.9	13.3	39.4	41.1	31.4	31.5	43.1	50.6	52.0	39.8	46.2	8.6	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.8	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.1	3.2	0.2	0.2	0.3	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.3	0.1	0.2	0.2	0.1	0.2	8,995.
5-8	36.7	26.7	2.4	2.0	4.2	38.4	6.2	19.6	15.2	11.0	17.2	14.7	26.7	6.3	6.9	1,403,139.
2-8	33.4	22.8	1.8	0.1	0.9	6.1	0.4	0.0	3.1	3.0	10.7	1.7	6.3	5.8	5.9	1,412,134.
0-8	31.2	20.1	0.5	0.1	0.2	5.1	0.3	0.0	2.9	1.9	1.0	1.6	5.4	5.4	5.4	1,412,134.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	7.4	4.4	1.4	1.4	2.7	3.2	2.5	0.4	2.3	3.1	5.2	4.6	4.4	4.9	4.9	242,914.
ST3	38.9	32.3	0.3	0.2	0.1	28.4	0.7	21.7	26.1	1.9	2.2	9.2	20.3	6.2	6.9	1,165,983.
LRY	35.8	27.1	3.9	0.9	4.2	33.6	4.9	6.1	24.9	15.0	14.6	15.8	28.2	7.2	8.3	969,331.
AL3	38.3	24.3	0.2	0.4	0.3	22.9	1.4	5.3	16.3	2.5	2.5	7.4	16.5	7.9	10.2	387,236.

II-D LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.7	7.7	3.1	4.2	5.0	5.0	73,477.
6	13.3	8.0	1.5	1.9	2.6	24.4	3.9	20.5	3.2	1.2	5.9	6.7	7.7	8.2	8.2	328,852.
7	15.0	16.9	10.2	7.2	9.3	9.3	10.2	10.1	10.2	11.8	13.4	8.0	13.6	5.5	5.6	690,792.
8	38.9	37.4	10.3	13.2	34.1	33.8	24.7	26.4	35.9	38.7	40.6	31.1	37.7	9.8	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.1	0.1	0.2	0.2	8,995.
5-8	29.9	21.9	2.4	2.0	3.3	32.4	4.8	20.6	13.3	8.3	13.8	12.2	21.8	6.4	6.9	1,403,139.
2-8	27.2	18.7	1.8	0.1	0.7	5.2	0.3	0.0	2.7	2.3	8.6	1.4	5.1	6.0	5.9	1,412,134.
0-8	25.4	16.5	0.5	0.1	0.2	4.3	0.2	0.0	2.5	1.4	0.8	1.3	4.4	5.6	5.4	1,412,134.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	5.9	3.6	1.3	1.3	2.0	2.5	1.9	0.3	2.5	2.4	4.0	3.7	3.5	5.0	4.9	242,914.
ST3	31.7	26.6	0.3	0.2	0.1	23.9	0.6	22.8	22.3	1.4	1.8	7.7	16.7	6.4	6.9	1,165,983.
LRY	29.1	22.3	4.4	0.8	3.2	28.4	3.7	6.4	21.7	11.8	11.4	12.9	23.0	7.5	8.3	969,331.
AL3	30.4	19.5	0.1	0.3	0.2	18.7	1.0	5.1	13.3	1.9	1.9	5.6	13.1	9.1	10.2	387,236.

TABLE G-2 CONT'D

II-D ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.7	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.0	3.2	0.2	0.2	0.3	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.3	2.0	0.1	9.5	0.0	0.0	5.0	6.1	7.8	3.4	4.6	5.0	5.0	73,477.
6	12.4	7.5	1.4	1.9	2.6	21.2	3.9	19.2	2.6	1.1	5.8	6.4	7.2	8.3	8.2	328,852.
7	14.6	16.5	8.5	7.1	9.3	8.0	10.2	10.1	8.7	9.4	11.1	6.8	13.0	5.5	5.6	690,792.
8	38.6	37.1	9.5	11.2	33.3	33.7	24.4	24.8	35.6	38.3	40.1	30.6	37.3	9.9	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.7	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.0	3.2	0.2	0.2	0.3	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.2	0.1	0.2	0.2	0.2	0.2	8,995.
5-8	29.4	21.6	2.2	2.0	3.3	31.8	4.8	19.3	12.7	8.5	13.5	11.6	21.4	6.5	6.9	1,403,139.
2-8	26.7	18.4	1.7	0.1	0.7	5.1	0.3	0.0	2.6	2.7	8.6	1.4	5.1	6.0	5.9	1,412,134.
0-8	25.0	16.3	0.4	0.1	0.2	4.2	0.2	0.0	2.4	1.7	0.8	1.3	4.3	5.6	5.4	1,412,134.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	5.7	3.4	1.2	1.4	2.0	3.1	2.0	0.4	2.1	3.0	4.2	4.0	3.6	5.0	4.9	242,914.
ST3	31.2	26.2	0.3	0.2	0.1	23.5	0.6	21.4	21.7	1.5	1.8	7.3	16.4	6.4	6.9	1,165,983.
LRY	28.6	21.9	3.4	0.7	3.2	27.8	3.7	6.0	20.7	11.4	11.2	12.3	22.5	7.5	8.3	969,331.
AL3	30.4	19.5	0.2	0.4	0.2	19.0	1.1	5.2	13.3	2.2	1.9	5.8	13.1	9.1	10.2	387,236.

II-E LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.7	7.7	3.1	4.2	5.0	5.0	73,477.
6	10.2	8.4	1.2	1.9	2.4	19.2	2.9	17.6	2.4	1.0	4.4	5.6	6.1	8.3	8.2	328,852.
7	11.6	12.4	8.4	7.1	8.3	6.8	9.8	10.1	7.2	8.6	10.1	6.0	10.3	5.5	5.6	690,792.
8	35.4	34.0	8.9	10.9	30.1	31.3	22.1	21.6	32.6	32.3	37.8	27.8	34.2	10.3	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.1	0.1	0.2	0.2	8,995.
5-8	26.4	19.1	2.0	2.0	3.0	29.5	3.8	17.7	11.6	7.1	12.2	10.4	19.1	6.5	6.9	1,403,139.
2-8	24.1	16.3	1.5	0.1	0.6	4.7	0.2	0.0	2.3	2.2	7.6	1.2	4.5	6.1	5.9	1,412,134.
0-8	22.5	14.4	0.4	0.1	0.2	3.9	0.2	0.0	2.2	1.4	0.7	1.1	3.9	5.6	5.4	1,412,134.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	4.7	3.0	1.1	1.3	1.9	2.4	1.5	0.3	2.0	2.4	3.2	3.4	3.1	5.0	4.9	242,914.
ST3	28.2	23.2	0.3	0.2	0.1	21.8	0.5	19.6	19.7	1.2	1.7	6.6	14.7	6.5	6.9	1,165,983.
LRY	25.7	19.4	3.1	0.6	2.9	25.8	2.9	5.5	18.8	9.8	10.0	10.9	20.1	7.7	8.3	969,331.
AL3	27.2	17.1	0.1	0.3	0.2	17.4	0.8	4.6	11.9	1.8	1.7	5.0	11.6	9.7	10.2	387,236.

II-E ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	2.8	3.1	0.2	0.2	0.4	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	5.3	7.7	3.2	4.4	5.0	5.0	73,477.
6	10.2	6.3	1.2	1.9	2.4	19.1	2.9	17.6	2.3	1.0	4.4	5.5	6.1	8.3	8.2	328,852.
7	11.6	12.4	8.4	7.1	8.3	6.8	9.8	10.1	7.2	8.5	10.1	6.0	10.3	5.5	5.6	690,792.
8	35.3	34.0	8.8	10.8	30.1	31.3	22.1	21.4	32.6	32.3	37.7	27.8	34.1	10.3	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	00	0.0	0.
3	5.6	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	2.8	3.1	0.2	0.2	0.4	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.1	0.1	0.2	0.1	0.2	0.2	8,995.
5-8	26.4	19.1	2.1	2.0	3.0	29.5	3.8	17.6	11.6	7.3	12.2	10.4	19.1	6.5	6.9	1,403,139.
2-8	24.0	16.3	1.6	0.1	0.6	4.8	0.2	0.0	2.3	2.5	7.7	1.3	4.5	6.1	5.9	1,412,134.
0-8	22.5	14.4	0.4	0.1	0.2	3.9	0.2	0.0	2.2	1.5	0.7	1.1	3.9	5.6	5.4	1,412,134.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	4.7	3.0	1.1	1.4	1.9	2.9	1.6	0.4	1.9	2.8	3.4	3.6	3.2	5.0	4.9	242,914.
ST3	26.1	23.2	0.3	0.2	0.1	21.8	0.5	19.5	19.7	1.2	1.6	6.6	14.7	6.5	6.9	1,165,983.
LRY	25.7	19.3	3.1	0.6	2.9	25.8	2.9	5.5	18.7	9.8	10.0	10.8	20.1	7.7	8.3	969,331.
AL3	27.2	17.1	0.1	0.3	0.8	17.6	0.9	4.7	11.9	2.0	1.7	5.1	11.7	9.7	10.2	387,326.

TABLE G-3
TOKYO 3

III-A

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	17.8	5.9	7.5	0.1	5.1	5.0	0.3	1.8	8.0	6.2	1.0	3.5	5.3	2.3	3.0	58,343.
1	9.6	10.1	4.9	0.0	10.4	2.8	0.0	0.0	3.6	7.7	10.3	7.0	7.2	5.4	5.6	8,381.
2	0.2	0.2	0.2	0.0	0.0	0.1	0.0	0.7	0.3	0.0	0.0	0.1	0.1	0.4	0.4	4,567.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	3.4	3.4	93.7	3.4	0.0	3.4	3.4	0.0	3.4	4.7	0.0	3.2	3.4	3.1	3.2	2,538.
5	7.2	6.2	2.2	2.0	0.1	9.5	0.0	0.0	5.0	7.0	8.5	3.6	5.0	5.0	5.0	73,477.
6	196.6	89.9	37.2	4.0	6.5	453.4	24.6	169.2	71.2	13.7	61.5	66.4	96.7	2.6	8.2	328,566.
7	209.7	298.2	1,185.8	48.1	38.4	524.1	34.1	10.1	1,173.6	822.9	730.4	716.7	407.9	1.9	5.6	690,134.
8	95.9	95.0	148.2	238.3	224.2	70.6	130.7	180.9	109.1	238.9	94.9	107.8	97.9	1.3	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	17.7	5.9	7.4	0.1	5.1	4.7	0.3	1.8	7.7	6.4	1.0	3.6	5.3	2.5	3.2	66,724.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.4	1.7	0.5	0.4	0.0	0.2	0.1	0.7	0.3	0.0	0.0	0.2	0.5	0.6	0.6	7,105.
0+4	7.9	3.7	6.8	0.1	4.0	1.2	0.1	0.0	0.5	3.6	1.0	0.6	1.1	1.6	1.4	79,404.
5-8	133.4	125.5	125.9	4.9	11.3	127.6	28.3	168.9	201.8	69.7	66.7	246.5	148.1	2.2	6.9	1,402,195.
2-8	121.4	107.5	93.5	0.2	2.4	19.6	1.6	0.1	40.5	8.7	39.8	26.2	34.2	2.1	5.9	1,414,876.
0-8	114.7	95.6	30.2	0.2	4.4	17.0	1.3	0.1	38.8	7.8	4.5	23.8	30.0	2.1	5.7	1,481,599.
ST1	0.7	0.5	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.9	0.4	17,886.
ST2	57.1	35.1	24.1	3.0	3.2	16.2	10.1	2.6	51.4	3.3	29.9	20.0	27.3	2.9	5.0	249,187.
ST3	134.7	143.6	35.4	2.3	6.0	91.3	3.5	187.8	327.1	19.1	8.8	187.0	112.1	2.0	7.2	1,214,526.
LHY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
AL3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.

III-B LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	2.7	1.4	6.9	0.1	5.1	0.9	0.3	0.2	1.5	5.2	0.8	1.7	3.5	2.8	3.0	58,343.
1	9.6	10.1	4.9	0.0	10.4	2.8	0.0	0.0	3.6	7.7	10.3	7.0	7.2	5.4	5.6	8,381.
2	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.7	0.3	0.0	0.0	0.1	0.1	0.4	0.4	4,567.
3	5.6	5.9	0.1	0.0	0.3	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	3.4	3.4	5.1	3.4	0.0	3.4	3.4	0.0	3.4	4.7	0.0	3.2	3.4	3.1	3.2	2,538.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.7	7.7	3.1	4.2	5.0	5.0	73,477.
6	9.0	5.4	1.2	1.9	1.7	16.9	2.6	14.1	2.2	0.8	3.9	4.7	5.3	8.4	8.2	328,852.
7	10.2	11.3	8.4	7.1	8.1	6.7	9.8	10.1	7.1	8.4	9.6	5.9	9.4	5.5	5.6	690,796.
8	26.0	25.0	8.0	9.2	23.0	22.6	16.9	17.8	23.9	25.8	27.1	21.0	25.1	11.6	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	2.8	1.5	6.9	0.1	5.1	1.2	0.3	0.2	1.6	5.6	0.9	1.7	3.6	3.0	3.2	66,724.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.4	1.6	0.2	0.4	0.0	0.2	0.1	0.7	0.3	0.0	0.0	0.2	0.5	0.6	0.6	7,105.
0+4	1.5	1.6	6.3	0.1	4.0	0.5	0.1	0.0	0.1	3.2	0.9	0.4	0.8	1.8	1.4	79,404.
5-8	20.0	14.7	2.0	1.9	2.3	21.7	3.3	14.2	9.1	6.0	9.6	8.5	14.7	6.7	6.9	1,403,139.
2-8	18.2	12.8	1.5	0.1	0.5	3.6	0.3	0.0	1.8	2.1	6.1	1.1	3.5	6.2	5.9	1,415,820.
0-8	17.2	11.5	5.4	0.1	3.9	3.2	0.3	0.0	1.8	3.4	1.3	1.1	3.5	6.0	5.7	1,482,543.
ST1	0.7	0.5	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.9	0.4	17,886.
ST2	4.2	3.0	1.1	1.8	1.4	2.7	2.0	0.5	1.9	2.4	3.0	3.1	2.9	5.2	5.0	249,473.
ST3	21.4	18.0	7.2	0.3	5.3	16.9	0.6	15.7	15.8	7.0	3.1	6.7	13.3	6.9	7.2	1,215,184.
LRY	19.6	15.0	4.8	0.6	2.2	19.4	2.6	4.6	14.8	8.8	8.2	9.1	15.6	8.0	8.4	979,148.
AL3	20.4	13.4	6.3	1.1	5.6	13.0	1.1	3.8	9.1	4.5	3.0	4.9	10.5	11.4	11.2	423,434.

III-B ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	6.4	4.3	11.5	0.1	8.5	1.8	0.4	1.8	4.1	8.8	1.3	5.2	6.7	1.8	3.0	58,343.
1	11.4	11.3	21.1	0.0	10.4	2.8	0.0	0.0	10.1	37.8	10.5	25.9	31.6	2.6	5.6	8,381.
2	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.7	0.3	0.0	0.0	0.1	0.1	0.4	0.4	4,567.
3	7.1	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	4.1	3.2	0.2	0.2	0.1	0.2	5,575.
4	4.7	4.1	5.1	11.6	0.0	3.4	7.2	0.0	3.4	6.1	0.0	6.0	4.5	2.6	3.2	2,538.
5	7.0	5.8	2.4	2.0	0.1	9.5	0.0	0.0	5.0	15.6	8.3	6.5	7.6	5.0	5.0	73,477.
6	68.3	33.0	5.4	2.1	6.2	57.7	23.5	21.3	9.3	2.5	45.0	23.4	33.2	6.6	8.2	328,852.
7	85.3	135.2	13.3	7.1	33.9	75.0	34.1	10.1	88.4	36.3	33.2	39.1	88.5	4.8	5.6	690,792.
8	73.0	74.5	20.6	19.8	86.7	51.0	61.6	81.2	69.7	162.8	65.9	63.3	73.1	4.8	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	6.5	4.3	11.8	0.1	8.5	1.9	0.4	1.8	4.6	12.9	1.4	5.4	7.5	1.9	3.2	66,724.
3	7.1	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	4.1	3.2	0.2	0.2	0.1	0.2	5,575.
2+4	0.5	1.9	0.2	1.4	0.0	0.2	0.1	0.7	0.3	0.0	0.0	0.3	0.6	0.6	0.6	7,105.
0+4	3.1	3.1	10.8	0.1	6.6	0.7	0.2	0.0	0.3	6.9	1.4	0.8	1.6	1.2	1.4	79,404.
5-8	73.7	67.2	6.0	2.1	4.5	52.0	25.1	23.1	34.9	32.0	43.0	35.5	59.6	5.2	6.9	1,403,139.
2-8	67.1	57.7	4.5	0.2	1.8	8.2	1.5	0.0	7.0	5.8	25.9	3.9	13.9	4.8	5.9	1,415,820.
0-8	63.2	51.4	9.9	0.2	6.7	7.1	1.3	0.0	6.9	8.5	3.6	4.1	13.0	4.6	5.7	1,482,543.
ST1	0.7	0.5	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.9	0.4	17,886.
ST2	35.4	14.5	4.4	3.2	3.8	7.0	11.2	2.2	7.2	4.1	26.3	10.0	13.3	4.2	5.0	249,473.
ST3	3.1	10.5	12.5	0.6	9.5	38.0	2.3	25.6	60.2	20.1	6.4	26.1	47.7	5.2	7.2	1,215,184.
LRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
AL3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.

TABLE G-3 CONT'D

III—C LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	5.1	2.5	7.1	0.1	5.1	1.4	0.3	0.4	2.4	5.4	0.9	2.1	3.9	2.7	3.0	58,343.
1	9.6	10.1	4.9	0.0	10.4	2.8	0.0	0.0	3.6	7.7	10.3	7.0	7.2	5.4	5.6	8,381.
2	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.7	0.3	0.0	0.0	0.1	0.1	0.4	0.4	4,567.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	3.4	3.4	10.1	3.4	0.0	3.4	3.4	0.0	3.4	4.7	0.0	3.2	3.4	3.1	3.2	2,538.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.8	7.7	3.1	4.2	5.0	5.0	73,477.
6	17.6	10.4	1.8	1.9	3.5	29.6	5.2	21.9	4.1	1.6	7.8	8.8	10.1	8.1	8.2	328,852.
7	19.8	22.4	12.0	7.3	10.6	12.0	10.7	10.1	13.4	15.3	17.1	10.1	17.8	5.5	5.6	690,792.
8	48.6	46.0	12.5	17.2	41.0	41.4	32.0	34.7	43.6	51.5	53.1	40.7	46.9	8.5	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	5.2	2.6	7.0	0.1	5.1	1.6	0.3	0.4	2.5	5.7	0.9	2.1	4.0	2.9	3.2	66,724.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.4	1.6	0.2	0.4	0.0	0.2	0.1	0.7	0.3	0.0	0.0	0.2	0.5	0.6	0.6	7,105.
0+4	2.5	2.1	6.4	0.1	4.0	0.6	0.1	0.0	0.2	3.3	0.9	0.4	0.9	1.8	1.4	79,404.
5–8	37.6	27.4	2.9	2.0	4.3	39.6	6.2	22.3	16.3	10.6	17.7	15.8	27.5	6.2	6.9	1,403,139.
2–8	34.2	23.7	2.2	0.1	0.9	6.3	0.4	0.0	3.3	2.6	10.9	1.8	6.5	5.8	5.9	1,415,820.
0–8	32.4	21.2	5.7	0.1	4.0	5.5	0.4	0.0	3.2	3.8	1.8	1.9	6.1	5.6	5.7	1,482,543.
ST1	0.7	0.5	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.9	0.4	17,886.
ST2	7.9	5.3	1.5	1.9	2.7	2.9	3.0	0.8	3.3	2.5	5.1	4.6	4.6	5.0	5.0	249,473.
ST3	40.2	33.6	7.5	0.3	5.4	30.5	0.9	24.7	28.4	7.9	4.2	11.7	23.3	6.4	7.2	1,215,184.
LRY	37.0	28.3	9.6	1.1	4.4	35.7	5.1	7.3	27.6	17.7	16.2	18.1	29.6	7.2	8.4	979,148.
AL3	38.5	24.8	6.3	1.1	5.7	22.9	1.7	5.5	16.7	4.9	4.2	8.2	18.1	8.6	11.2	423,434.

III-C ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	3.8	2.5	11.4	0.1	8.5	1.2	0.4	0.4	2.0	8.6	1.3	3.1	5.9	2.1	3.0	58,343.
1	10.2	10.4	8.2	0.0	10.4	2.8	0.0	0.0	5.0	14.3	10.5	11.0	12.5	4.8	5.6	8,381.
2	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.7	0.3	0.0	0.0	0.1	0.1	0.4	0.4	4,567.
3	5.8	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.1	3.2	0.2	0.2	0.3	0.2	5,575.
4	4.4	4.1	5.1	6.3	0.0	3.4	4.8	0.0	3.4	5.3	0.0	4.4	4.2	2.8	3.2	2,538.
5	7.0	5.8	2.3	2.0	0.1	9.5	0.0	0.0	5.0	7.5	7.8	3.6	5.0	5.0	5.0	73,477.
6	15.9	9.5	1.6	1.9	3.5	23.1	5.2	19.3	2.9	1.4	7.6	8.1	9.1	8.1	8.2	328,852.
7	19.0	21.6	8.6	7.1	10.5	9.3	10.7	10.1	10.2	10.4	12.6	7.7	16.6	5.5	5.6	690,792.
8	47.8	45.4	10.9	13.3	39.4	41.1	31.4	31.5	43.1	50.6	52.0	39.8	46.2	8.6	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	3.8	2.5	11.4	0.1	8.5	1.4	0.4	0.4	2.3	9.4	1.3	3.2	6.1	2.3	3.2	66,724.
3	5.8	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.1	3.2	0.2	0.2	0.3	0.2	5,575.
2+4	0.5	1.9	0.2	0.8	0.0	0.2	0.1	0.7	0.3	0.0	0.0	0.2	0.6	0.6	0.6	7,105.
0+4	2.0	2.2	10.4	0.1	6.6	0.6	0.2	0.0	0.1	5.1	1.3	0.6	1.3	1.4	1.4	79,404.
5–8	36.7	26.7	2.4	2.0	4.2	38.4	6.2	19.6	15.2	11.0	17.2	14.7	26.7	6.3	6.9	1,403,139.
2–8	33.4	23.1	1.8	0.1	0.9	6.2	0.4	0.0	3.1	3.0	10.7	1.8	6.3	5.9	5.9	1,415,820.
0–8	31.5	20.7	8.8	0.1	6.5	5.3	0.4	0.0	3.0	5.5	2.2	1.9	6.3	5.6	5.7	1,482,534.
ST1	0.7	0.5	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.9	0.4	17,886.
ST2	7.6	5.0	1.4	2.4	2.7	3.5	3.5	0.8	2.4	3.2	5.2	4.7	4.6	5.0	5.0	249,473.
ST3	39.1	32.8	11.9	0.4	8.9	29.4	0.9	21.8	27.2	12.2	5.3	11.9	24.0	6.3	7.2	1,215,184.
LRY	36.0	27.4	6.0	0.9	4.3	34.3	5.0	6.4	25.5	16.6	15.6	16.7	28.6	7.3	8.4	979,148.
AL3	38.5	24.9	10.5	1.9	9.3	23.2	1.9	5.6	16.8	7.4	5.3	9.1	19.3	8.1	11.2	423,434.

III-D LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	3.9	2.0	7.0	0.1	5.1	1.2	0.3	0.3	1.9	5.3	0.9	1.9	3.7	2.7	3.0	58,343.
1	9.6	10.1	4.9	0.0	10.4	2.8	0.0	0.0	3.6	7.7	10.3	7.0	7.2	5.4	5.6	8,381.
2	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.7	0.3	0.0	0.0	0.1	0.1	0.4	0.4	4,567.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	3.4	3.4	7.6	3.4	0.0	3.4	3.4	0.0	3.4	4.7	0.0	3.2	3.4	3.1	3.2	2,538.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.7	7.7	3.1	4.2	5.0	5.0	73,477.
6	13.3	8.0	1.5	1.9	2.6	24.4	3.9	20.5	3.2	1.2	5.9	6.7	7.7	8.2	8.2	328,852.
7	15.0	16.9	10.2	7.2	9.3	9.3	10.2	10.1	10.2	11.8	13.4	8.0	13.6	5.5	5.6	690,792.
8	38.9	37.4	10.3	13.2	34.1	33.8	24.7	26.4	35.9	38.7	40.6	31.1	37.7	9.8	13.3	310,017.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	4.0	2.0	6.9	0.1	5.1	1.4	0.3	0.3	2.1	5.6	0.9	1.9	3.8	3.0	3.2	66,724.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.4	1.6	0.2	0.4	0.0	0.2	0.1	0.7	0.3	0.0	0.0	0.2	0.5	0.6	0.6	7,105.
0+4	2.0	1.8	6.4	0.1	4.0	0.6	0.1	0.0	0.1	3.3	0.9	0.4	0.8	1.8	1.4	79,404.
5–8	29.9	21.9	2.4	2.0	3.3	32.4	4.8	20.6	13.3	8.3	13.8	12.2	21.8	6.4	6.9	1,403,139.
2–8	27.2	19.0	1.9	0.1	0.7	5.2	0.3	0.0	2.7	2.3	8.6	1.4	5.2	6.0	5.9	1,415,820.
0–8	25.7	17.0	5.6	0.1	3.9	4.5	0.3	0.0	2.6	3.6	1.6	1.5	5.0	5.8	5.7	1,482,543.
ST1	0.7	0.5	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.9	0.4	17,886.
ST2	6.1	4.1	1.3	1.9	2.0	2.8	2.5	0.7	2.6	2.5	4.1	3.8	3.8	5.1	5.0	249,473.
ST3	32.0	26.9	7.4	0.3	5.4	25.0	0.7	22.8	23.2	7.5	3.7	9.3	18.9	6.6	7.2	1,215,184.
LRY	29.3	22.5	7.2	0.8	3.4	29.1	3.8	6.6	22.2	13.3	12.3	13.7	23.4	7.6	8.4	979,148.
AL3	30.6	19.9	6.3	1.1	5.6	19.0	1.4	5.4	13.6	4.7	3.6	6.6	14.8	9.8	11.2	423,434.

TABLE G-3 CONT'D

III-D ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	3.2	2.0	10.3	0.1	7.6	1.1	0.4	0.3	1.8	7.7	1.2	2.4	5.2	2.3	3.0	58,343.
1	0.9	10.3	6.6	0.0	10.4	2.8	0.0	0.0	4.3	11.0	10.4	9.0	9.8	5.1	5.6	8,381.
2	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.7	0.3	0.0	0.0	0.1	0.1	0.4	0.4	4,567.
3	5.7	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.0	3.2	0.2	0.2	0.3	0.2	5,575.
4	4.4	4.1	5.1	4.0	0.0	3.4	4.2	0.0	3.4	5.1	0.0	4.0	4.1	2.8	3.2	2,538.
5	7.0	5.8	2.3	2.0	0.1	9.5	0.0	0.0	5.0	6.1	7.8	3.4	4.6	5.0	5.0	73,477.
6	17.4	7.5	1.4	1.9	2.6	21.2	3.9	19.2	2.6	1.1	5.8	6.4	7.2	8.3	8.2	328,852.
7	14.6	16.5	8.5	7.1	9.3	8.0	10.2	10.1	8.7	9.4	11.1	6.8	13.0	5.5	5.6	690,792.
8	38.6	37.1	9.5	11.2	33.3	33.7	24.4	24.8	35.6	38.3	40.1	30.6	37.3	9.9	13.3	310,017.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	3.3	2.0	10.2	0.1	7.6	1.3	0.4	0.3	2.0	8.2	1.2	2.5	5.3	2.5	3.2	66.724.
3	5.7	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	3.0	3.2	0.2	0.2	0.3	0.2	5,575.
2+4	0.5	1.9	0.2	0.6	0.0	0.2	0.1	0.7	0.3	0.0	0.0	0.2	0.5	0.6	0.6	7,105.
0+4	1.7	2.0	9.3	0.1	6.0	0.6	0.2	0.0	0.1	4.5	1.2	0.5	1.2	1.5	1.4	79,404.
5-8	29.4	21.6	2.2	2.0	3.3	31.8	4.8	19.3	12.7	8.5	13.5	11.6	21.4	6.5	6.9	1,403,139.
2-8	26.8	18.7	1.7	0.1	0.7	5.2	0.4	0.0	2.6	2.7	8.6	1.4	5.1	6.0	5.9	1,415,820.
0-8	25.3	16.7	7.9	0.1	5.8	4.5	0.4	0.0	2.5	4.8	1.9	1.5	5.1	5.8	5.7	1,482,543.
ST1	0.7	0.5	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.9	0.4	17,886.
ST2	5.9	4.1	1.3	2.1	2.0	3.4	2.8	0.7	2.2	3.0	4.2	4.1	3.9	5.1	5.0	249,473.
ST3	31.4	26.6	10.7	0.4	8.0	24.5	0.8	21.4	22.6	10.4	4.6	9.4	19.5	6.6	7.2	1,215,184.
LRY	28.8	22.1	5.4	0.7	3.3	28.4	3.8	6.2	21.2	12.7	12.0	13.0	22.9	7.6	8.4	979,184.
AL3	35.6	20.0	9.4	1.6	8.3	19.3	1.5	5.4	13.7	6.5	4.4	7.1	15.6	9.5	11.2	423,434.

III-E LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	3.2	1.7	6.9	0.1	5.1	1.0	0.3	0.2	1.6	5.3	0.8	1.8	3.6	2.8	3.0	58,343.
1	9.6	10.1	4.5	0.0	10.4	2.8	0.0	0.0	3.6	7.7	10.3	7.0	7.2	5.4	5.6	8,381.
2	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.7	0.3	0.0	0.0	0.1	0.1	0.4	0.4	4,567.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	3.4	3.4	5.3	3.4	0.0	3.4	3.4	0.0	3.4	4.7	0.0	3.2	3.4	3.1	3.2	2,538.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.7	7.7	3.1	4.2	5.0	5.0	73,477.
6	10.2	6.4	1.2	1.9	2.4	19.2	2.9	17.6	2.4	1.0	4.4	5.5	6.1	8.3	8.2	328,852.
7	11.6	12.4	8.4	7.1	8.3	6.8	9.8	10.1	7.2	8.6	10.1	6.0	10.3	5.5	5.6	690,792.
8	35.4	34.0	8.9	10.9	30.1	31.3	22.1	21.6	32.6	32.3	37.8	27.8	34.2	10.3	13.3	310,017.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	3.3	1.8	6.9	0.1	5.1	1.3	0.3	0.2	1.8	5.6	0.9	1.8	3.7	3.0	3.2	66.724.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.4	1.6	0.2	0.4	0.0	0.2	0.1	0.7	0.3	0.0	0.0	0.2	0.5	0.6	0.6	7,105.
0+4	1.7	1.7	6.3	0.1	4.0	0.5	0.1	0.0	0.1	3.2	0.9	0.4	0.8	1.8	1.4	79,404.
5-8	26.4	19.1	2.0	2.0	3.0	29.5	3.8	17.7	11.6	7.1	12.2	10.4	19.1	6.5	6.9	1,403,139.
2-8	24.1	16.5	1.6	0.1	0.6	4.7	0.3	0.0	2.3	2.2	7.7	1.3	4.6	6.1	5.9	1,415,820.
0-8	27.7	14.8	5.5	0.1	3.9	4.1	0.3	0.0	2.3	3.5	1.5	1.3	4.4	5.9	5.7	1,482,543.
ST1	0.7	0.5	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.9	0.4	17,886.
ST2	4.9	3.5	1.1	1.8	2.0	2.7	2.1	0.6	2.0	2.4	3.2	3.5	3.3	5.2	5.0	249,473.
ST3	28.4	23.5	7.3	0.3	5.4	22.8	0.7	19.6	20.5	7.2	3.6	8.1	16.9	6.7	7.2	1,215,184.
LRY	25.9	19.6	5.4	0.7	3.0	26.4	2.9	5.7	19.2	11.0	10.7	11.5	20.4	7.7	8.4	979,148.
AL3	27.3	17.8	6.3	1.1	5.6	17.6	1.2	4.8	12.2	4.6	3.4	5.9	13.3	10.4	11.2	423,434.

III-E ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	3.0	1.8	9.6	0.1	7.1	1.0	0.3	0.2	1.6	7.2	1.1	2.1	4.8	2.4	3.0	58,343.
1	9.8	10.2	5.5	0.0	10.4	2.8	0.0	0.0	3.9	9.0	10.4	7.7	8.2	5.3	5.6	8,381.
2	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.7	0.3	0.0	0.0	0.1	0.1	0.4	0.4	4,567.
3	5.6	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	2.8	3.1	0.2	0.2	0.4	0.2	5,575.
4	4.1	3.9	5.1	4.2	0.0	3.4	3.9	0.0	3.4	5.0	0.0	3.7	3.9	2.9	3.2	2,538.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	5.3	7.7	3.2	4.4	5.0	5.0	73,477.
6	10.5	6.3	1.2	1.9	2.4	19.1	2.9	17.6	2.3	1.0	4.4	5.5	6.1	8.3	8.2	328,852.
7	11.6	12.4	8.4	7.1	8.3	6.8	9.8	10.1	7.2	8.5	10.1	6.0	10.3	5.5	5.6	690,792.
8	35.3	34.0	8.9	10.8	30.1	31.3	22.1	21.4	32.6	32.3	37.7	27.8	34.1	10.3	13.3	310,017.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	3.1	1.8	9.5	0.1	7.1	1.3	0.3	0.2	1.8	7.5	1.1	2.2	4.9	2.6	3.2	66,724.
3	5.6	5.9	0.1	0.0	0.0	0.4	0.2	0.0	0.0	2.8	3.1	0.2	0.2	0.4	0.2	5,575.
2+4	0.5	1.9	0.2	0.5	0.0	0.2	0.1	0.7	0.3	0.0	0.0	0.2	0.5	0.6	0.6	7,105.
0+4	1.6	1.8	8.7	0.1	5.6	0.6	0.1	0.0	0.1	4.2	1.1	0.4	1.1	1.6	1.4	79,404.
5-8	26.4	19.1	2.1	2.0	3.0	29.5	3.8	17.6	11.6	7.3	12.2	10.4	19.1	6.5	6.9	1,403,139.
2-8	24.1	16.6	1.6	0.1	0.6	4.8	0.3	0.0	2.3	2.5	7.7	1.3	4.6	6.1	5.9	1,415,820.
0-8	22.7	14.8	7.4	0.1	5.4	4.2	0.3	0.0	2.3	4.4	1.7	1.4	4.6	5.8	5.7	1,482,543.
ST1	0.7	0.5	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.9	0.4	17,886.
ST2	4.9	3.6	1.1	2.0	2.0	3.2	2.3	0.6	2.0	2.9	3.4	3.7	3.5	5.1	5.0	249,473.
ST3	28.4	23.5	10.0	0.3	7.5	22.7	0.7	19.5	20.5	9.4	4.2	8.4	17.6	6.7	7.2	1,215,184.
LRY	25.9	19.5	5.0	0.6	3.0	26.3	2.9	5.6	19.2	10.9	10.6	11.5	20.4	7.7	8.4	979,148.
AL3	27.4	17.6	8.7	1.4	7.8	17.8	1.3	4.8	12.2	5.9	4.0	6.2	13.9	10.1	11.2	423,434.

TABLE G-4
GSP

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	1.6	0.9	4.6	0.1	3.4	0.5	0.2	0.1	0.9	3.4	0.6	1.1	2.3	0.0	0.5	11,041.
1	6.4	6.8	3.3	0.0	6.9	1.9	0.0	0.0	2.4	5.1	6.9	4.6	4.8	0.0	0.5	747.
2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	81.
3	3.7	3.9	0.1	0.0	0.0	0.2	0.1	0.0	0.0	1.6	1.7	0.1	0.1	0.0	0.1	2,190.
4	2.2	2.2	3.4	2.2	0.0	2.2	2.2	0.0	2.2	3.2	0.0	2.1	2.2	0.0	0.7	521.
5	4.7	3.8	1.5	1.4	0.1	6.3	0.0	0.0	3.3	3.1	5.1	2.1	2.8	0.0	0.0	475.
6	4.4	2.8	0.6	1.3	0.2	11.3	1.7	9.4	0.7	0.2	0.9	1.3	2.4	0.0	0.1	5,622.
7	6.4	5.7	5.6	4.7	5.4	4.5	6.5	6.7	4.7	5.6	6.4	3.8	5.4	0.0	0.0	6,089.
8	3.5	2.5	4.1	3.9	4.8	3.5	2.7	7.6	2.9	5.5	1.4	3.5	3.1	0.0	0.4	9,083.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	1.6	0.9	4.5	0.1	3.4	0.7	0.2	0.1	1.0	3.6	0.6	1.1	2.4	0.0	0.5	11,788.
3	3.7	3.9	0.1	0.0	0.0	0.2	0.1	0.0	0.0	1.6	1.7	0.1	0.1	0.0	0.1	2,190.
2+4	0.3	1.1	0.1	0.3	0.0	0.2	0.0	0.4	0.2	0.0	0.0	0.1	0.3	0.0	0.0	602.
0+4	0.9	1.0	4.2	0.0	2.6	0.3	0.1	0.0	0.1	2.1	0.6	0.2	0.5	0.0	0.2	14,581.
5-8	4.1	3.1	1.2	1.3	0.5	4.7	2.0	9.4	1.9	2.0	1.8	2.5	3.2	0.0	0.1	21,269.
2-8	3.8	2.8	0.9	0.1	0.1	0.9	0.2	0.0	0.4	1.2	1.4	0.4	0.8	0.0	0.1	24,062.
0-8	3.6	2.6	3.6	0.1	2.5	0.9	0.2	0.0	0.4	2.1	0.7	0.4	1.1	0.0	0.1	35,850.
ST1	0.4	0.3	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	433.
ST2	1.5	1.3	0.6	1.2	0.0	1.8	1.3	0.4	0.5	1.6	0.9	1.3	1.3	0.0	0.1	5,625.
ST3	4.3	3.6	4.8	0.1	3.5	3.5	0.3	7.5	3.3	4.2	1.5	2.5	3.7	0.0	0.2	29,791.
LRY	4.0	3.2	2.8	0.3	0.4	4.3	1.5	3.0	2.8	2.5	1.2	2.4	3.4	0.0	0.2	20,448.
AL3	3.7	2.7	4.1	0.7	3.6	3.0	0.7	2.5	1.4	2.8	1.3	1.6	2.9	0.0	0.8	29,626.

TABLE G-4a
GSP—No Exclusions

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	1.6	0.9	4.6	0.1	3.4	0.5	0.2	0.1	0.9	3.4	0.6	1.1	2.3	0.0	0.5	11,041.
1	6.4	6.8	3.3	0.0	6.9	1.9	0.0	0.0	2.4	5.1	6.9	4.6	4.8	0.0	0.5	747.
2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	81.
3	3.7	3.9	0.1	0.0	0.0	0.2	0.1	0.0	0.0	1.6	1.7	0.1	0.1	0.0	0.1	2,190.
4	2.2	2.2	3.4	2.2	0.0	2.2	2.2	0.0	2.2	3.2	0.0	2.1	2.2	0.0	0.7	521.
5	4.7	3.8	1.5	1.4	0.1	6.3	0.0	0.0	3.3	3.1	5.1	2.1	2.8	0.0	0.0	475.
6	6.0	3.6	0.8	1.3	1.2	11.3	1.7	9.4	1.5	0.5	2.6	3.1	3.5	0.0	0.2	8,308.
7	6.8	7.6	5.6	4.7	5.4	4.5	6.5	6.7	4.7	5.6	6.4	3.9	6.2	0.0	0.1	7,013.
8	17.3	16.6	5.3	6.1	15.3	15.0	11.2	11.9	16.0	17.2	18.1	14.0	16.8	0.0	2.1	48,461.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	1.6	0.9	4.5	0.1	3.4	0.7	0.2	0.1	1.0	3.6	0.6	1.1	2.4	0.0	0.5	11,788.
3	3.7	3.9	0.1	0.0	0.0	0.2	0.1	0.0	0.0	1.6	1.7	0.1	0.1	0.0	0.1	2,190.
2+4	0.3	1.1	0.1	0.3	0.0	0.2	0.0	0.4	0.2	0.0	0.0	0.1	0.3	0.0	0.0	602.
0+4	0.9	1.0	4.2	0.0	2.6	0.3	0.1	0.0	0.1	2.1	0.6	0.2	0.5	0.0	0.2	14,581.
5-8	13.3	9.8	1.3	1.3	1.5	14.5	2.2	9.5	6.0	4.0	6.4	5.7	9.8	0.0	0.3	64,258.
2-8	12.1	8.5	1.0	0.1	0.3	2.4	0.2	0.0	1.2	1.4	4.1	0.7	2.4	0.0	0.3	67,050.
0-8	11.4	7.6	3.6	0.1	2.6	2.1	0.2	0.0	1.2	2.2	0.9	0.7	2.4	0.0	0.3	78,838.
ST1	0.4	0.3	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	433.
ST2	2.8	2.0	0.7	1.2	0.9	1.8	1.3	0.4	1.3	1.6	2.0	2.1	1.9	0.0	0.2	8,311.
ST3	14.1	11.9	4.8	0.1	3.5	9.9	0.4	7.6	10.0	4.5	2.0	4.4	8.7	0.0	0.4	70,094.
LRY	13.0	10.0	3.2	0.4	1.5	13.0	1.7	3.0	9.9	5.9	5.5	6.1	10.4	0.0	0.5	63,380.
AL3	13.6	8.9	4.2	0.7	3.7	8.7	0.7	2.5	6.1	3.0	2.0	3.2	7.0	0.0	1.9	72,199.

TABLE G-5
GSSP

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	1.8	1.9	4.6	0.2	6.8	0.6	0.3	0.1	1.0	3.5	0.6	1.1	3.0	0.0	0.7	14,164.
1	6.4	13.5	3.3	0.0	13.8	1.9	0.0	0.0	2.4	5.1	6.9	4.6	5.0	0.0	0.5	773.
2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.1	0.0	0.0	97.
3	3.7	7.8	0.1	0.0	0.0	0.2	0.2	0.0	0.0	1.6	1.7	0.1	0.1	0.0	0.1	2,197.
4	2.2	4.5	3.4	4.5	0.0	2.2	4.5	0.0	2.2	3.2	0.0	2.1	4.0	0.0	1.2	941.
5	4.7	7.7	1.5	2.7	0.2	6.3	0.0	0.0	3.3	3.1	5.1	2.1	3.2	0.0	0.0	544.
6	4.4	5.5	0.6	2.5	0.4	11.3	3.5	9.4	0.7	0.2	0.9	1.3	3.5	0.0	0.2	8,206.
7	6.4	11.3	5.6	9.4	10.8	4.5	13.0	6.7	4.7	5.5	6.4	3.8	7.3	0.0	0.1	8,210.
8	3.5	5.0	4.1	7.8	9.6	3.5	5.5	7.6	2.9	5.5	1.4	3.5	4.0	0.0	0.5	11,478.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	1.9	2.0	4.6	0.2	6.8	0.8	0.3	0.1	1.1	3.7	0.6	1.2	3.1	0.0	0.7	14,937.
3	3.7	7.8	0.1	0.0	0.0	0.2	0.2	0.0	0.0	1.6	1.7	0.1	0.1	0.0	0.1	2,197.
2+4	0.3	2.2	0.1	0.6	0.0	0.2	0.1	0.4	0.2	0.0	0.0	0.1	0.5	0.0	0.1	1,038.
0+4	1.0	2.1	4.2	0.1	5.3	0.3	0.2	0.0	0.1	2.2	0.6	0.2	0.7	0.0	0.3	18,173.
5–8	4.1	6.3	1.2	2.6	1.1	4.7	3.9	9.4	1.9	2.0	1.8	2.5	4.3	0.0	0.1	28,437.
2–8	3.8	5.7	0.9	0.1	0.2	0.9	0.3	0.0	0.4	1.2	1.4	0.4	1.1	0.0	0.1	31,673.
0–8	3.7	5.2	3.6	0.1	5.1	0.9	0.3	0.0	0.4	2.1	0.7	0.4	1.4	0.0	0.2	46,610.
ST1	0.4	0.7	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	497.
ST2	1.5	2.7	0.6	2.5	0.1	1.8	2.6	0.4	0.5	1.6	0.9	1.3	1.7	0.0	0.1	7,288.
ST3	4.4	7.3	4.8	0.4	7.1	4.0	0.6	10.3	3.5	4.3	1.5	2.6	4.9	0.0	0.2	38,825.
LRY	4.0	6.4	2.8	0.6	0.8	4.3	3.0	3.0	2.8	2.5	1.2	2.4	4.5	0.0	0.2	27,553.
AL3	3.7	5.4	4.1	1.5	7.3	3.0	1.3	2.5	1.4	2.8	1.3	1.6	3.8	0.0	1.0	38,970.

TABLE G-5a
GSSP—No Exclusions

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	1.6	1.8	4.6	0.2	6.7	0.5	0.3	0.1	0.9	3.4	0.6	1.1	2.9	0.0	0.6	14,164.
1	6.4	13.5	3.3	0.0	13.8	1.9	0.0	0.0	2.4	5.1	6.9	4.6	5.0	0.0	0.5	773.
2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.1	0.0	0.0	97.
3	3.7	7.8	0.1	0.0	0.0	0.2	0.2	0.0	0.0	1.6	1.7	0.1	0.1	0.0	0.1	2,197.
4	2.2	4.5	3.4	4.5	0.0	2.2	4.5	0.0	2.2	3.2	0.0	2.1	4.0	0.0	1.2	941.
5	4.7	7.7	1.5	2.7	0.2	6.3	0.0	0.0	3.3	3.1	5.1	2.1	3.2	0.0	0.0	544.
6	4.4	7.2	0.6	2.5	2.3	11.3	3.5	9.4	0.7	0.2	0.9	1.3	4.2	0.0	0.2	9,850.
7	6.4	15.1	5.6	9.4	10.8	4.5	13.0	6.7	4.7	5.5	6.4	3.8	8.6	0.0	0.1	9,619.
8	3.5	33.3	4.1	12.2	30.6	3.5	22.5	7.6	2.9	5.5	1.4	3.5	13.4	0.0	1.7	38,885.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	1.6	1.9	4.5	0.2	6.7	0.7	0.3	0.1	1.0	3.6	0.6	1.1	3.0	0.0	0.6	14,937.
3	3.7	7.8	0.1	0.0	0.0	0.2	0.2	0.0	0.0	1.6	1.7	0.1	0.1	0.0	0.1	2,197.
2+4	0.3	2.2	0.1	0.6	0.0	0.2	0.1	0.4	0.2	0.0	0.0	0.1	0.5	0.0	0.1	1,038.
0+4	0.9	2.0	4.2	0.1	5.3	0.3	0.2	0.0	0.1	2.1	0.6	0.2	0.7	0.0	0.3	18,173.
5–8	4.1	19.6	1.2	2.6	3.1	4.7	4.5	9.4	1.9	2.0	1.8	2.5	9.0	0.0	0.3	58,897
2–8	3.8	17.0	0.9	0.1	0.7	0.9	0.3	0.0	0.4	1.2	1.4	0.4	2.2	0.0	0.3	62,133.
0–8	3.6	15.2	3.6	0.1	5.1	0.9	0.3	0.0	0.4	2.1	0.6	0.4	2.3	0.0	0.3	77,070.
ST1	0.4	0.7	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	497.
ST2	1.5	4.0	0.6	2.5	1.8	1.8	2.6	0.4	0.5	1.6	0.9	1.3	2.1	0.0	0.2	8,932.
ST3	4.3	23.7	4.8	0.3	7.1	3.5	0.7	7.5	3.3	4.2	1.5	2.5	8.4	0.0	0.4	67,641.
LRY	4.0	20.0	2.8	0.7	3.0	4.3	3.4	3.0	2.8	2.5	1.2	2.4	9.5	0.0	0.5	57,909.
AL3	3.7	17.8	4.1	1.5	7.4	3.0	1.4	2.5	1.4	2.8	1.3	1.6	6.7	0.0	1.8	69,071.

TABLE G-6
GSP and MFN

VI-A

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.3	0.3	3,445.
3	7.4	7.8	0.1	0.0	0.0	0.5	0.2	0.0	0.0	3.2	3.4	0.2	0.2	0.5	0.3	6,666.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	9.4	7.7	3.0	2.7	0.2	12.6	0.0	0.0	6.6	6.2	10.2	4.1	5.6	5.0	5.0	73,714.
6	7.2	4.1	1.2	2.5	0.4	6.0	3.4	0.7	1.0	0.2	1.1	2.2	3.7	6.4	6.2	248,753.
7	12.8	11.3	11.2	9.4	10.8	8.9	13.0	13.5	9.4	11.1	12.8	7.5	10.8	5.5	5.6	692,438.
8	6.9	5.0	8.3	7.8	9.6	7.1	5.5	15.2	5.8	11.0	2.8	7.0	6.3	8.7	8.4	196,765.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	7.4	7.8	0.1	0.0	0.0	0.5	0.2	0.0	0.0	3.2	3.4	0.2	0.2	0.5	0.3	6,666.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.3	0.3	3,445.
0+4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.3	0.1	0.2	0.2	0.2	0.2	10,111.
5-8	8.0	5.7	2.3	2.6	1.1	6.9	3.9	1.2	3.7	3.9	3.2	4.8	6.1	6.0	6.0	1,211,670.
2-8	7.3	4.9	1.8	0.1	0.2	1.4	0.3	0.0	0.7	2.3	2.5	0.7	1.6	5.6	5.1	1,221,782.
0-8	6.7	4.2	0.5	0.1	0.1	1.1	0.2	0.0	0.7	1.4	0.2	0.6	1.3	5.1	4.6	1,221,782.
ST1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,254.
ST2	2.8	1.9	1.2	1.8	0.0	3.2	1.8	0.5	1.0	3.1	1.8	2.5	2.3	3.9	3.8	187,477.
ST3	8.0	6.1	0.3	0.1	0.1	4.4	0.3	0.7	5.5	0.6	0.4	3.1	4.3	6.1	6.0	1,031,050.
LRY	7.5	5.5	3.1	0.6	0.7	5.8	2.9	0.2	4.9	3.6	1.3	4.0	6.0	6.7	6.7	777,718.
AL3	7.0	4.4	0.1	0.3	0.1	5.0	0.9	0.4	2.4	1.9	0.3	2.0	3.3	7.1	6.1	230,583.

VI-B LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.1	0.3	3,445.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
4	4.5	4.5	6.7	4.5	0.0	4.5	4.5	0.0	4.5	6.3	0.0	4.3	4.5	3.1	0.0	0.
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	73,714.
6	316.3	209.5	20.3	0.0	126.0	1,105.5	1.6	1,210.4	130.8	55.1	274.4	265.2	218.8	0.0	6.2	248,753.
7	12.2	55.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.0	4.8	24.1	1.9	5.6	692,438.
8	76.8	78.5	6.5	12.3	58.4	63.9	47.2	23.8	72.5	64.9	92.4	58.2	75.6	8.1	8.4	196,765.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
2+4	0.4	2.1	0.1	0.5	0.0	0.3	0.1	0.9	0.4	0.0	0.0	0.2	0.6	0.3	0.3	3,445.
0+4	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	10,111.
5-8	111.9	126.9	16.5	0.0	112.4	216.5	2.9	1,170.0	91.6	39.4	184.7	136.1	116.6	2.0	6.0	1,211,670.
2-8	101.8	108.8	12.2	0.0	23.8	32.8	0.2	0.8	18.4	4.1	108.7	14.4	26.9	1.9	5.1	1,221,782.
0-8	94.2	95.3	3.2	0.0	6.2	26.4	0.2	0.8	17.3	2.5	9.6	12.8	22.9	1.7	4.6	1,221,782.
ST1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3,254.
ST2	174.6	89.4	15.4	0.7	116.3	0.5	0.5	0.0	98.9	3.9	145.5	101.4	85.3	0.0	3.8	187,477.
ST3	76.6	105.6	0.3	0.0	0.1	141.3	0.9	958.1	55.7	2.8	7.6	18.8	50.1	2.4	6.0	1,031,050.
LRY	109.7	129.8	47.2	0.3	120.8	191.0	2.5	367.6	156.0	66.7	170.4	156.7	125.0	2.4	6.7	777,718.
AL3	115.7	105.3	3.3	1.0	9.0	80.7	0.8	284.5	62.0	3.2	27.0	65.4	67.3	2.7	6.1	230,583.

VI-B ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.1	0.3	3,445.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
4	4.5	4.5	6.7	4.5	0.0	4.5	4.5	0.0	4.5	6.3	0.0	4.3	4.5	3.1	0.0	0.
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	73,714.
6	4.7	3.1	0.3	0.0	1.9	16.6	0.0	18.2	2.0	0.8	4.1	4.0	3.3	2.0	6.2	248,753.
7	12.2	55.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.0	4.8	24.1	1.9	5.6	692,438.
8	76.8	78.5	6.5	12.3	58.4	63.9	47.2	23.8	72.5	64.9	92.4	58.2	75.6	8.1	8.4	196,765.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
2+4	0.4	2.1	0.1	0.5	0.0	0.3	0.1	0.9	0.4	0.0	0.0	0.2	0.6	0.3	0.3	3,445.
0+4	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	10,111.
5-8	51.8	43.7	0.4	0.0	2.6	56.8	1.5	18.3	21.5	10.5	22.4	15.8	38.7	2.4	6.0	1,211,670.
2-8	47.2	37.7	0.3	0.0	0.6	8.6	0.1	0.0	4.3	1.1	13.2	1.7	8.9	2.3	5.1	1,221,782.
0-8	43.7	33.0	0.1	0.0	0.1	6.9	0.1	0.0	4.1	0.7	1.2	1.5	7.6	2.1	4.6	1,221,782.
ST1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3,254.
ST2	2.8	2.0	0.2	0.7	1.7	0.2	0.5	0.0	1.5	0.1	2.2	1.6	1.5	1.2	3.8	187,477.
ST3	56.3	56.3	0.0	0.0	0.1	37.1	0.5	15.0	37.3	1.9	3.3	11.4	30.9	2.6	6.0	1,031,050.
LRY	50.9	44.8	1.2	0.3	2.8	50.1	1.3	5.7	36.8	17.8	20.6	18.3	41.6	3.2	6.7	777,718.
AL3	55.8	41.4	0.1	1.0	0.2	32.4	0.5	4.5	25.4	0.9	3.3	8.1	24.5	4.3	6.1	230,583.

TABLE G-6 CONT'D

VI-C LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.1	0.3	3,445.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
4	4.5	4.5	6.7	4.5	0.0	4.5	4.5	0.0	4.5	6.3	0.0	4.3	4.5	3.1	0.0	0.
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	73,714.
6	9.5	6.3	0.6	0.0	3.8	33.2	0.0	36.3	3.9	1.7	8.2	8.0	6.6	2.0	6.2	248,753.
7	1.7	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.7	3.3	2.0	5.6	692,438.
8	55.3	56.5	4.7	8.9	42.0	46.0	34.0	17.2	52.2	46.7	66.5	41.9	54.4	9.6	8.4	196,765.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
2+4	0.4	2.1	0.1	0.5	0.0	0.3	0.1	0.9	0.4	0.0	0.0	0.2	0.6	0.3	0.3	3,445.
0+4	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	10,111.
5-8	37.3	27.8	0.6	0.0	4.0	44.0	1.1	35.6	16.9	8.1	19.3	13.0	26.9	2.6	6.0	1,211,670.
2-8	34.0	24.1	0.5	0.0	0.8	6.7	0.1	0.0	3.4	0.8	11.3	1.4	6.2	2.5	5.1	1,221,782.
0-8	31.4	21.1	0.1	0.0	0.2	5.4	0.1	0.0	3.2	0.5	1.0	1.2	5.3	2.3	4.6	1,221,782.
ST1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3,254.
ST2	5.4	3.3	0.5	0.7	3.5	0.2	0.5	0.0	3.0	0.1	4.4	3.1	2.8	1.2	3.8	187,477.
ST3	39.6	34.5	0.0	0.0	0.1	28.7	0.3	29.2	27.2	1.4	2.4	7.7	20.7	2.8	6.0	1,031,050.
LRY	36.6	28.5	1.7	0.2	4.3	38.8	0.9	11.2	28.8	13.8	17.8	15.0	29.0	3.5	6.7	777,718.
AL3	40.1	26.1	0.1	1.0	0.3	24.3	0.4	8.7	19.0	0.7	2.9	6.6	17.0	5.8	6.1	230,583.

VI-C ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.1	0.3	3,445.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
4	4.5	4.5	6.7	4.5	0.0	4.5	4.5	0.0	4.5	6.3	0.0	4.3	4.5	3.1	0.0	0.
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	73,714.
6	4.7	3.1	0.3	0.0	1.9	16.6	0.0	18.2	2.0	0.8	4.1	4.0	3.3	2.0	6.2	248,753.
7	1.3	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	2.5	2.0	5.6	692,438.
8	41.5	42.4	3.5	6.7	31.5	34.5	25.5	12.9	39.1	35.0	49.9	31.4	40.8	10.6	8.4	196,765.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
2+4	0.4	2.1	0.1	0.5	0.0	0.3	0.1	0.9	0.4	0.0	0.0	0.2	0.6	0.3	0.3	3,445.
0+4	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	10,111.
5-8	27.5	20.2	0.3	0.0	2.2	31.8	0.8	17.9	12.1	5.9	13.2	8.8	19.6	2.8	6.0	1,211,670.
2-8	25.1	17.6	0.3	0.0	0.5	4.8	0.1	0.0	2.4	0.6	7.8	0.9	4.5	2.6	5.1	1,221,782.
0-8	23.2	15.4	0.1	0.0	0.1	3.9	0.1	0.0	2.3	0.4	0.7	0.8	3.9	2.4	4.6	1,221,782.
ST1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3,254.
ST2	2.8	2.0	0.2	0.7	1.7	0.2	0.5	0.0	1.5	0.1	2.2	1.6	1.5	1.2	3.8	187,477.
ST3	29.6	25.5	0.0	0.0	0.0	20.8	0.3	14.7	20.3	1.0	1.8	5.7	15.4	3.0	6.0	1,031,050.
LRY	27.0	20.7	1.0	0.2	2.3	28.0	0.7	5.6	20.7	9.9	12.2	10.2	21.1	3.7	6.7	777,716.
AL3	29.6	19.2	0.1	1.0	0.2	17.8	0.4	4.4	14.0	0.5	2.0	4.5	12.4	6.5	6.1	230,583.

VI-D LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.1	0.3	3,445.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
4	4.5	4.5	6.7	4.5	0.0	4.5	4.5	0.0	4.5	6.3	0.0	4.3	4.5	3.1	0.0	0.
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	73,714.
6	7.1	4.7	0.5	0.0	2.8	24.9	0.0	27.2	2.9	1.2	6.2	6.0	4.9	2.0	6.2	248,753.
7	1.3	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	2.5	2.0	5.6	196,765.
8	41.5	42.4	3.5	6.7	31.5	34.5	25.5	12.9	39.1	35.0	49.9	31.4	40.8	10.6	8.4	196,765.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
2+4	0.4	2.1	0.1	0.5	0.0	0.3	0.1	0.9	0.4	0.0	0.0	0.2	0.6	0.3	0.3	3,445.
0+4	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	10,111.
5-8	26.0	20.9	0.4	0.0	3.0	33.0	0.8	26.7	12.6	6.1	14.5	9.7	20.2	2.7	6.0	1,211,670.
2-8	25.5	18.1	0.3	0.0	0.6	5.0	0.1	0.0	2.5	0.6	8.5	1.0	4.7	2.6	5.1	1,221,782.
0-8	23.6	15.9	0.1	0.0	0.2	4.0	0.1	0.0	2.4	0.4	0.8	0.9	4.0	2.4	4.6	1,221,782.
ST1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3,254.
ST2	4.1	2.7	0.4	0.7	2.6	0.2	0.5	0.0	2.2	0.1	3.3	2.4	2.2	1.2	3.8	187,477.
ST3	29.7	25.9	0.0	0.0	0.0	21.5	0.3	21.9	20.4	1.0	1.8	5.8	15.5	2.9	6.0	1,031,050.
LRY	27.5	21.4	1.3	0.2	3.2	29.1	0.7	8.4	21.6	10.3	13.3	11.3	21.7	3.7	6.7	777,718.
AL3	30.1	19.7	0.1	1.0	0.2	18.2	0.4	6.5	14.2	0.5	2.2	4.9	12.7	6.5	6.1	230,583.

TABLE G-6 CONT'D

VI-D ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.1	0.3	3,445.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
4	4.5	4.5	6.7	4.5	0.0	4.5	4.5	0.0	4.5	6.3	0.0	4.3	4.5	3.1	0.0	0.
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	73,714.
6	4.7	3.1	0.3	0.0	1.9	16.6	0.0	18.2	2.0	0.8	4.1	4.0	3.3	2.0	6.2	248,753.
7	1.7	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.7	3.3	2.0	5.6	692,438.
8	55.3	56.5	4.7	8.9	42.0	46.0	34.0	17.2	52.2	46.7	66.5	41.9	54.4	9.6	8.4	196,765.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
2+4	0.4	2.1	0.1	0.5	0.0	0.3	0.1	0.9	0.4	0.0	0.0	0.2	0.6	0.3	0.3	3,445.
0+4	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	10,111.
5-8	36.4	26.5	0.3	0.0	2.3	41.5	1.1	18.1	15.8	7.7	16.8	11.2	25.8	2.7	6.0	1,211,670.
2-8	33.1	23.0	0.3	0.0	0.5	6.3	0.1	0.0	3.2	0.8	9.9	1.2	6.0	2.5	5.1	1,221,782.
0-8	30.7	20.1	0.1	0.0	0.1	5.1	0.1	0.0	3.0	0.5	0.9	1.1	5.1	2.3	4.6	1,221,782.
ST1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3,254.
ST2	2.8	2.0	0.2	0.7	1.7	0.2	0.5	0.0	1.5	0.1	2.2	1.6	1.5	1.2	3.8	187,477.
ST3	39.3	33.8	0.0	0.0	0.1	27.1	0.3	14.8	26.9	1.3	2.4	7.6	20.4	2.8	6.0	1,031,050.
LRY	35.7	27.2	1.0	0.2	2.5	36.6	0.9	5.7	27.0	13.0	15.5	12.9	27.7	3.5	6.7	777,718.
AL3	39.2	25.2	0.1	1.0	0.2	23.5	0.4	4.4	18.4	0.7	2.5	5.7	16.3	5.8	6.1	230,583.

VI-E LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.1	0.3	3,445.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
4	4.5	4.5	6.7	4.5	0.0	4.5	4.5	0.0	4.5	6.3	0.0	4.3	4.5	3.1	0.0	0.
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	73,714.
6	4.8	3.2	0.3	0.0	1.9	16.8	0.0	18.4	2.0	0.8	4.2	4.0	3.3	2.0	6.2	248,753.
7	0.9	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	1.8	2.0	5.6	692,438.
8	37.6	28.4	3.2	6.0	28.6	31.3	23.1	11.7	35.5	31.8	45.2	28.5	37.0	10.9	8.4	196,765.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6,666.
2+4	0.4	2.1	0.1	0.5	0.0	0.3	0.1	0.9	0.4	0.0	0.0	0.2	0.6	0.3	0.3	3,445.
0+4	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	10,111.
5-8	25.0	18.3	0.3	0.0	2.1	29.1	0.7	18.2	11.1	5.4	12.2	8.2	17.8	2.8	6.0	1,211,670.
2-8	22.8	15.9	0.3	0.0	0.5	4.4	0.1	0.0	2.2	0.6	7.2	0.9	4.1	2.6	5.1	1,221,782.
0-8	21.1	14.0	0.1	0.0	0.1	3.6	0.1	0.0	2.1	0.3	0.6	0.8	3.5	2.4	4.6	1,221,782.
ST1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3,254.
ST2	2.8	2.0	0.2	0.7	1.8	0.2	0.5	0.0	1.5	0.1	2.2	1.6	1.5	1.2	3.8	187,477.
ST3	26.8	23.0	0.0	0.0	0.0	19.0	0.2	14.9	18.4	0.9	1.6	5.2	13.9	3.0	6.0	1,031.050.
LRY	24.6	18.7	1.0	0.1	2.3	25.6	0.6	5.7	18.9	9.1	11.3	9.5	19.2	3.8	6.7	777,718.
AL3	26.9	17.4	0.1	1.0	0.2	16.3	0.4	4.4	12.7	0.5	1.8	4.2	11.3	6.8	6.1	230,583.

VI-E ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.1	0.3	3,445.
3	0.3	0.0	0.0	0.0	0.0	0.6	0.2	0.0	0.0	3.8	4.1	0.3	0.3	0.1	0.3	6,666.
4	4.5	4.5	6.7	4.5	0.0	4.5	4.5	0.0	4.5	6.3	0.0	4.3	4.5	3.1	0.0	0.
5	3.6	4.8	0.9	0.1	0.2	15.7	0.0	0.0	5.4	5.7	12.6	1.4	3.4	0.8	5.0	73,714.
6	8.7	5.8	0.6	0.0	1.9	18.8	3.8	18.2	2.6	0.9	5.4	5.4	5.5	2.7	6.2	248,753.
7	0.9	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	1.8	2.0	5.6	692,438.
8	37.6	38.4	3.2	6.0	28.6	31.3	23.1	11.7	35.5	31.8	45.2	28.5	37.0	10.9	8.4	196,765.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
3	0.3	0.0	0.0	0.0	0.0	0.6	0.2	0.0	0.0	3.8	4.1	0.3	0.3	0.1	0.3	6,666.
2+4	0.4	2.1	0.1	0.5	0.0	0.3	0.1	0.9	0.4	0.0	0.0	0.2	0.6	0.3	0.3	3,445.
0+4	0.2	1.1	0.0	0.0	0.0	0.4	0.1	0.0	0.0	1.5	0.1	0.2	0.2	0.1	0.2	10,111.
5-8	25.8	19.4	0.6	0.1	2.2	29.4	4.2	17.9	11.8	7.0	15.1	8.9	18.7	3.0	6.0	1,211,670.
2-8	23.5	16.9	0.5	0.1	0.5	4.9	0.3	0.0	2.4	3.0	9.7	1.2	4.5	2.8	5.1	1,221,782.
0-8	21.7	14.8	0.1	0.0	0.1	3.9	0.3	0.0	2.2	1.9	0.9	1.1	3.8	2.6	4.6	1,221,782.
ST1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3,254.
ST2	5.0	4.0	0.5	1.0	1.8	3.9	2.7	0.4	2.2	3.7	4.3	4.2	3.8	1.7	3.8	187,477.
ST3	27.1	23.1	0.0	0.0	0.0	19.1	0.2	14.7	18.9	1.2	2.0	5.2	14.0	3.1	6.0	1,031,050.
LRY	25.2	19.7	1.2	0.5	2.3	25.8	3.6	5.6	19.0	9.2	12.0	9.9	19.9	3.9	6.7	777,718.
AL3	27.4	18.2	0.1	1.4	0.2	18.0	1.3	4.7	12.7	2.6	2.1	5.4	12.1	6.8	6.1	230,583.

TABLE G-7
ELIMINATION

VII-A

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	4.7	2.7	13.7	0.3	10.1	1.6	0.5	0.4	2.7	10.1	1.7	3.3	6.8	4.7	5.2	116,685.
1	19.2	20.3	9.8	0.0	20.7	5.6	0.0	0.0	7.3	15.4	20.6	13.9	14.4	10.9	11.2	16,763.
2	0.4	0.2	0.4	0.0	0.1	0.1	0.0	1.3	0.7	0.0	0.1	0.1	0.1	0.9	0.8	9,134.
3	11.2	11.8	0.2	0.0	0.0	0.7	0.3	0.0	0.0	4.8	5.1	0.4	0.3	1.0	0.5	11,151.
4	6.7	6.7	10.1	6.7	0.0	6.7	6.7	0.0	6.7	9.5	0.0	6.4	6.7	6.2	6.3	5,075.
5	14.0	11.5	4.5	4.1	0.3	18.9	0.0	0.0	9.9	9.3	15.4	6.2	8.4	10.0	10.0	146,954.
6	18.0	10.8	2.3	3.8	3.5	33.8	5.2	28.3	4.5	1.6	7.8	9.3	10.5	16.8	16.4	657,705.
7	20.5	22.7	16.7	14.2	16.2	13.4	19.6	20.2	14.2	16.8	19.1	11.8	18.7	11.1	11.1	1,381,585.
8	51.9	49.9	15.9	18.3	46.0	45.1	33.7	35.7	47.9	51.6	54.2	41.9	50.3	23.2	26.6	620,035.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	4.8	2.8	13.6	0.3	10.1	2.2	0.5	0.4	3.0	10.8	1.7	3.4	7.1	5.1	5.5	133,448.
3	11.2	11.8	0.2	0.0	0.0	0.7	0.3	0.0	0.0	4.8	5.1	0.4	0.3	1.0	0.5	11,151.
2+4	0.9	3.2	0.4	0.8	0.1	0.5	0.1	1.3	0.7	0.0	0.1	0.3	0.9	1.2	1.1	14,210.
0+4	2.8	3.0	12.5	0.1	7.9	1.0	0.2	0.0	0.2	6.4	1.8	0.7	1.6	3.3	2.6	158,808.
5-8	40.0	29.4	3.9	3.9	4.6	43.4	6.7	28.5	18.1	12.0	19.2	17.0	29.4	13.4	13.9	2,806,279.
2-8	36.4	25.6	3.0	0.2	1.0	7.1	0.5	0.0	3.6	4.2	12.3	2.1	7.1	12.5	11.8	2,831,639.
0-8	34.1	22.8	10.8	0.2	7.7	6.2	0.5	0.0	3.6	6.7	2.7	2.2	7.1	11.9	11.2	2,965,087.
ST1	1.3	1.0	0.6	0.0	0.1	0.2	0.0	0.0	0.0	0.6	0.6	0.0	0.1	1.7	0.9	35,772.
ST2	8.4	6.0	2.1	3.7	2.7	5.3	3.9	1.1	3.8	4.8	6.0	6.2	5.8	10.4	10.0	498,947.
ST3	42.2	35.6	14.4	0.4	10.6	29.6	1.1	22.9	30.1	13.6	6.1	13.2	26.2	13.5	14.1	2,430,368.
LRY	39.1	30.0	9.7	1.1	4.5	38.9	5.1	9.1	29.7	17.7	16.4	18.3	31.2	16.0	16.8	1,958,297.
AL3	40.8	26.8	12.5	2.2	11.1	26.0	2.1	7.5	18.2	9.1	5.9	9.7	20.9	22.9	22.3	846,868.

VII-B LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	35.6	11.8	15.0	0.3	10.3	10.0	0.6	3.6	16.1	12.4	2.0	7.1	10.5	4.5	5.9	116,685.
1	20.0	20.5	9.8	0.0	20.7	5.6	0.0	0.0	7.3	16.9	21.1	14.4	15.4	10.8	11.2	16,763.
2	0.4	0.4	0.4	0.0	0.1	0.1	0.0	1.3	0.7	0.0	0.1	0.2	0.2	0.9	0.8	9,134.
3	11.2	11.8	8.2	0.0	0.0	0.7	0.3	0.0	0.0	4.8	5.1	0.4	0.3	1.0	0.5	11,151.
4	6.7	6.7	187.5	6.7	0.0	6.7	6.7	0.0	6.7	9.5	0.0	6.4	6.9	6.1	6.3	5,075.
5	15.3	20.1	4.5	4.1	0.3	18.9	0.0	0.0	9.9	17.2	17.0	7.3	11.5	10.0	10.0	146,954.
6	396.1	180.3	77.8	7.9	13.4	908.7	50.4	338.3	142.4	27.4	123.0	133.3	194.4	5.2	16.4	657,705.
7	418.4	596.3	2,377.7	96.2	78.9	1,048.1	68.1	20.2	2,347.2	1,645.8	1,460.7	1,433.5	815.8	3.8	11.1	1,381,585.
8	191.7	189.9	296.4	476.5	456.2	141.2	261.5	361.7	218.2	477.9	189.7	215.6	195.7	2.6	26.6	620,035.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	35.4	11.9	14.8	0.3	10.3	9.3	0.6	3.6	15.4	13.1	2.1	7.2	10.7	5.0	6.3	133,448.
3	11.2	11.8	0.2	0.0	0.0	0.7	0.3	0.0	0.0	4.8	5.1	0.4	0.3	1.0	0.5	11,151.
2+4	0.9	3.3	1.0	0.8	0.1	0.5	0.1	1.3	0.7	0.0	0.1	0.4	1.0	1.1	1.1	14,210.
0+4	15.9	7.4	13.7	0.1	8.0	2.4	0.2	0.0	1.0	7.2	2.1	1.1	2.3	3.1	2.7	158,808.
5-8	267.3	251.3	251.8	9.8	22.9	255.4	57.6	337.9	403.5	140.3	133.5	493.3	296.7	4.4	13.9	2,806,279.
2-8	243.3	215.2	187.0	0.4	4.9	39.2	3.2	0.2	80.9	17.5	79.5	52.3	68.5	4.2	11.8	2,831,639.
0-8	228.8	191.3	60.4	0.4	5.9	34.0	2.7	0.2	77.5	15.8	9.0	47.6	60.1	4.2	11.4	2,965,087.
ST1	1.3	1.0	0.6	0.0	0.1	0.2	0.0	0.0	0.0	0.6	0.6	0.0	0.1	1.7	0.9	35,772.
ST2	116.4	30.6	48.2	6.0	6.6	32.7	20.8	5.2	102.8	6.7	59.8	40.2	55.1	5.8	10.0	498,947.
ST3	268.4	287.2	70.9	4.5	18.0	182.7	7.1	375.6	654.1	38.3	17.7	373.9	224.3	4.1	14.3	2,430,368.

VII-B ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	18.9	9.6	23.9	0.3	17.0	4.3	0.9	3.6	9.1	17.6	2.7	10.4	13.9	3.4	5.9	116,685.
1	22.8	22.6	42.2	0.0	20.7	5.6	0.0	0.0	20.3	75.5	21.1	51.9	63.2	5.2	11.2	16,763.
2	0.4	0.2	0.4	0.0	0.1	0.1	0.0	1.3	0.7	0.0	0.1	0.1	0.1	0.9	0.8	9,134.
3	14.1	11.8	0.2	0.0	0.0	0.9	0.3	0.0	0.0	8.1	6.5	0.5	0.5	0.3	0.5	11,151.
4	9.4	8.1	10.1	23.2	0.0	6.7	14.4	0.0	6.7	12.2	0.0	12.0	9.1	5.2	6.3	5,075.
5	14.1	11.5	4.7	4.1	0.3	18.9	0.0	0.0	10.0	31.2	16.5	13.0	15.3	10.0	10.0	146,954.
6	136.7	66.1	10.8	4.1	12.3	115.4	47.0	42.7	18.6	5.0	90.0	46.8	66.3	13.3	16.4	657,705.
7	170.7	270.4	26.6	14.2	67.7	150.0	68.1	20.2	176.7	72.5	66.4	78.2	177.1	9.6	11.1	1,381,585.
8	146.0	149.0	41.3	39.6	173.5	102.1	123.3	162.4	139.4	325.6	131.8	126.7	146.2	9.7	26.6	620,035.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	18.9	9.7	24.4	0.3	17.0	4.5	0.9	3.6	10.0	25.9	2.8	10.9	15.5	3.6	6.3	133,448.
3	14.1	11.8	0.2	0.0	0.0	0.8	0.3	0.0	0.0	8.1	6.5	0.5	0.5	0.3	0.5	11,151.
2+4	1.1	3.9	0.4	2.8	0.1	0.5	0.3	1.3	0.7	0.0	0.1	0.5	1.2	1.1	1.1	14,210.
0-4	8.8	6.7	22.4	0.2	13.3	1.6	0.4	0.0	0.6	13.8	2.8	1.7	3.3	2.3	2.7	158,808.
5-8	147.4	134.4	12.1	4.3	17.0	104.0	50.3	46.2	69.9	64.0	86.0	70.9	119.2	10.3	13.9	2,806,279.
2-8	134.1	115.4	9.1	0.4	3.6	16.5	3.0	0.0	14.0	11.6	51.8	7.9	27.8	9.7	11.8	2,831,639.
0-8	126.7	103.0	20.3	0.3	13.5	14.4	2.6	0.0	13.8	17.0	7.2	8.2	26.0	9.2	11.4	2,965,087.
ST1	1.3	1.0	0.6	0.0	0.1	0.2	0.0	0.0	0.0	0.6	0.6	0.0	0.1	1.7	0.9	35,772.
ST2	70.8	28.3	8.8	6.5	6.5	14.1	22.4	4.5	14.5	8.2	52.6	20.0	26.5	8.5	10.0	498,947.
ST3	146.7	161.2	25.8	0.9	18.5	76.7	4.6	51.3	120.8	40.2	13.1	52.3	95.7	10.4	14.3	2,430,368.

TABLE G-7 CONT'D

VII-D LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	7.8	4.0	14.0	0.3	10.2	2.4	0.5	0.6	3.8	10.6	1.7	3.8	7.4	5.4	5.9	116,685.
1	19.5	20.4	9.8	0.0	20.7	5.6	0.0	0.0	7.3	16.0	20.8	14.1	14.7	10.8	11.2	16,763.
2	0.4	0.2	0.4	0.0	0.1	0.1	0.0	1.3	0.7	0.0	0.1	0.1	0.1	0.9	0.8	9,134.
3	11.2	11.8	0.2	0.0	0.0	0.7	0.3	0.0	0.0	4.8	5.1	0.4	0.3	1.0	0.5	11,151.
4	6.7	6.7	15.2	6.7	0.0	6.7	6.7	0.0	6.7	9.5	0.0	6.4	6.7	6.2	6.3	5,075.
5	14.1	11.5	4.5	4.1	0.3	18.9	0.0	0.0	9.9	9.4	15.4	6.2	8.5	10.0	10.0	146,954.
6	26.7	15.9	3.0	3.8	5.2	48.9	7.8	40.9	6.3	2.4	11.7	13.4	15.4	16.0	16.4	657,705.
7	30.0	33.8	20.3	14.4	18.6	18.7	20.5	20.2	20.5	23.6	26.7	16.0	27.2	10.9	11.1	1,381,585.
8	77.9	74.8	20.7	26.4	68.1	67.7	49.4	52.8	71.8	77.4	81.3	62.2	75.3	17.2	26.6	620,035.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	8.0	4.1	13.9	0.3	10.2	2.9	0.5	0.6	4.1	11.4	1.8	3.9	7.6	5.8	6.3	133,448.
3	11.2	11.8	0.2	0.0	0.0	0.7	0.8	0.0	0.0	4.8	5.1	0.4	0.3	1.0	0.5	11,151.
2+4	0.9	3.2	0.4	0.8	0.1	0.5	0.1	1.8	0.7	0.0	0.1	0.3	0.9	1.2	1.1	14,210.
0-4	4.0	3.7	12.7	0.1	8.0	1.1	0.2	0.0	0.3	6.5	1.8	0.8	1.7	3.5	2.7	158,808.
5-8	59.7	43.9	4.9	4.0	6.6	64.8	9.6	41.2	26.6	16.6	27.5	24.4	43.7	12.5	13.9	2,806,279.
2-8	54.4	38.0	3.7	0.2	1.4	10.4	0.7	0.0	5.3	4.6	17.1	2.9	10.3	11.6	11.8	2,831,639.
0-8	51.4	34.0	11.2	0.2	7.9	9.1	0.6	0.0	5.3	7.2	3.2	3.0	9.9	11.2	11.4	2,965,087.
ST1	1.3	1.0	0.6	0.0	0.1	0.2	0.0	0.0	0.0	0.6	0.6	0.0	0.1	1.7	0.9	35,772.
ST2	12.2	8.3	2.6	3.7	4.1	5.6	5.0	1.3	5.2	4.9	8.1	7.7	7.5	10.0	10.0	498,947.
ST3	63.9	53.9	14.8	0.6	10.8	50.0	1.5	45.7	46.4	15.0	7.4	18.6	37.8	12.7	14.3	2,430,368.

VII-D ALTERNATIVE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	7.5	4.2	20.7	0.3	15.2	2.2	0.7	0.6	3.6	15.5	2.3	4.8	10.4	4.2	5.9	116,685.
1	19.8	20.6	18.1	0.0	20.7	5.6	0.0	0.0	8.6	22.0	20.8	18.0	19.7	9.4	11.2	16,763.
2	0.4	0.2	0.4	0.0	0.1	0.1	0.0	1.3	0.7	0.0	0.1	0.1	0.1	0.9	0.8	9,134.
3	11.4	11.8	0.2	0.0	0.0	0.9	0.3	0.0	0.0	6.0	6.5	0.4	0.4	0.6	0.5	11,151.
4	8.7	8.1	10.1	9.8	0.0	6.7	8.4	0.0	6.7	10.2	0.0	8.0	8.2	5.5	6.3	5,075.
5	14.0	11.5	4.5	4.1	0.3	18.9	0.0	0.0	9.9	12.2	15.5	6.7	9.2	10.0	10.0	146,954.
6	24.9	15.0	2.8	3.8	5.2	42.4	7.8	38.3	5.2	2.2	11.5	12.8	14.5	16.2	16.4	657,705.
7	29.3	13.0	17.0	14.8	18.5	16.0	20.5	20.2	17.3	18.8	22.2	13.7	25.9	10.9	11.1	1,381,585.
8	77.1	74.2	19.0	22.5	66.5	67.4	48.8	49.6	71.2	76.5	80.1	61.3	74.6	17.5	26.6	620,035.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	7.6	4.3	20.5	0.3	15.2	2.8	0.7	0.6	4.0	16.4	2.4	5.0	10.7	4.6	6.3	133,448.
3	11.4	11.8	0.2	0.0	0.0	0.9	0.3	0.0	0.0	6.0	6.5	0.4	0.4	0.6	0.5	11,151.
2+4	1.0	3.9	0.4	1.2	0.1	0.5	0.1	1.3	0.7	0.0	0.1	0.4	1.1	1.1	1.1	14,210.
0-4	3.9	4.1	18.8	0.1	11.9	1.5	0.3	0.0	0.3	9.1	2.4	1.0	2.3	2.8	2.7	158,808.
5-8	58.8	43.1	4.4	3.9	6.6	63.6	9.6	38.6	25.5	17.0	27.1	23.3	42.8	12.5	13.9	2,806,279.
2-8	53.6	37.4	3.4	0.2	1.4	10.3	0.7	0.0	5.1	5.4	17.1	2.9	10.2	11.7	11.8	2,831,639.
0-8	50.6	33.5	16.0	0.2	11.8	9.0	0.7	0.0	5.1	9.6	3.7	3.1	10.3	11.2	11.4	2,965,087.
ST1	1.3	1.0	0.6	0.0	0.1	0.2	0.0	0.0	0.0	0.6	0.6	0.0	0.1	1.7	0.9	35,772.
ST2	11.9	8.1	2.5	4.3	4.1	6.8	5.6	1.4	4.4	6.1	8.4	8.2	7.8	10.0	10.0	498,947.
ST3	63.0	53.2	21.5	0.7	16.0	49.0	1.6	42.8	45.3	20.8	9.1	18.8	39.1	12.7	14.3	2,430,368.

TABLE G-8
PREF LARY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	4.1	2.1	0.3	0.0	0.0	0.8	0.0	0.4	1.6	0.2	0.1	0.8	0.7	0.0	0.5	11,379.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	414.
5	7.0	5.8	2.2	2.0	0.1	9.5	0.0	0.0	5.0	4.8	7.7	3.1	4.2	5.0	5.0	73,482.
6	17.6	10.6	1.8	1.9	3.5	32.6	5.2	28.0	4.1	1.6	7.8	8.7	10.1	6.4	8.5	339,685.
7	19.8	22.4	11.9	7.3	10.6	12.0	10.7	10.1	13.4	15.3	17.1	10.1	17.8	5.5	5.6	697,425.
8	51.9	49.9	12.7	17.2	45.1	45.1	32.6	34.9	47.9	51.6	54.2	41.2	50.2	8.7	16.4	382,462.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	4.0	2.1	0.3	0.0	0.0	0.7	0.0	0.4	1.5	0.2	0.1	0.8	0.6	0.0	0.5	11,379.
3	5.6	5.9	0.1	0.0	0.0	0.3	0.1	0.0	0.0	2.4	2.6	0.2	0.2	0.5	0.2	5,575.
2+4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,833.
0+4	2.0	1.0	0.3	0.0	0.0	0.4	0.0	0.0	0.1	1.0	0.1	0.2	0.2	0.2	0.3	20,788.
5–8	39.7	29.2	2.9	2.0	4.3	43.2	6.3	28.2	17.5	10.6	17.9	15.9	29.0	6.0	7.4	1,493,054.
2–8	36.1	24.9	2.2	0.1	0.9	6.8	0.4	0.0	3.5	2.6	11.0	1.8	6.8	5.6	6.3	1,502,462.
0–8	33.7	22.1	0.8	0.1	0.2	5.6	0.3	0.0	3.4	1.6	1.0	1.7	5.9	5.1	5.8	1,513,842.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	7.8	4.7	1.5	1.3	2.7	2.8	2.4	0.8	3.2	2.5	5.1	4.5	4.4	3.9	5.0	251,115.
ST3	42.0	35.4	0.7	0.1	0.1	28.7	0.7	22.9	29.0	1.9	2.4	10.6	22.2	6.1	7.3	1,259,488.
LRY	39.1	30.0	9.6	1.1	4.5	38.9	5.1	9.1	29.7	17.7	16.4	18.3	31.2	6.7	9.2	1,071,820.
AL3	40.7	26.2	0.2	0.3	0.3	24.9	1.3	7.3	18.1	2.1	2.6	7.6	17.5	7.1	12.7	479,998.

TABLE G-9
PREF ALT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	1.8	2.1	13.4	0.0	10.1	0.4	0.4	0.4	1.1	9.9	1.3	2.9	6.4	0.0	2.0	46,054.
1	1.1	0.6	6.7	0.0	0.0	0.0	0.0	0.0	2.7	13.1	0.3	8.1	10.6	0.0	3.7	5,457.
2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	3,420.
3	5.8	5.9	0.1	0.0	0.0	0.7	0.3	0.0	0.0	4.8	5.1	0.4	0.3	0.5	0.4	8,841.
4	6.6	6.7	0.0	6.7	0.0	0.0	6.7	0.0	0.0	1.7	0.0	5.7	6.6	0.0	2.3	1,812.
5	7.0	5.8	2.3	2.0	0.1	9.5	0.0	0.0	5.0	7.5	7.8	3.6	5.0	5.0	5.0	73,605.
6	15.6	9.2	1.6	1.9	3.5	20.1	5.2	22.9	2.1	1.3	7.5	7.9	8.9	6.4	7.6	303,010.
7	19.0	21.6	8.6	7.1	10.5	9.3	10.7	10.1	10.2	10.4	12.6	7.7	16.6	5.5	5.6	698,761.
8	51.1	49.3	11.0	13.3	43.5	44.8	31.9	31.7	47.3	50.7	53.0	40.3	49.5	8.7	16.3	379,426.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0+1	1.8	2.1	13.2	0.0	10.0	0.4	0.4	0.4	1.2	10.3	1.3	3.0	6.6	0.0	2.1	51,511.
3	5.8	5.9	0.1	0.0	0.0	0.7	0.3	0.0	0.0	4.8	5.1	0.4	0.3	0.5	0.4	8,841.
2+4	0.7	3.2	0.2	0.8	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.8	0.3	0.4	5,232.
0+4	1.2	2.6	12.1	0.1	7.9	0.6	0.2	0.0	0.1	6.2	1.3	0.7	1.5	0.2	1.1	65,584.
5-8	34.7	28.2	2.4	2.0	4.3	41.1	6.3	23.1	16.0	11.0	17.4	14.7	28.0	6.0	7.2	1,454,802.
2-8	35.3	24.6	1.8	0.1	0.9	6.7	0.5	0.0	3.2	4.0	11.2	1.9	6.7	5.6	6.1	1,468,874.
0-8	32.8	21.8	10.2	0.1	7.7	5.5	0.5	0.0	3.1	6.5	2.2	2.0	6.7	5.1	5.8	1,520,385.
ST1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3,238.
ST2	7.5	5.2	1.4	2.5	2.7	4.9	3.9	1.0	1.7	4.7	5.7	5.6	5.2	3.9	4.7	232,369.
ST3	40.8	34.5	13.8	0.3	10.6	26.9	0.9	18.7	27.6	13.4	5.8	11.8	25.3	6.1	7.5	1,284,778.
LRY	37.9	29.0	4.2	0.9	4.4	36.4	5.0	7.5	26.7	16.2	15.5	16.7	29.9	6.7	8.8	1,026,521.
AL3	40.8	26.8	12.5	2.2	11.1	26.0	2.1	7.5	18.2	9.1	5.9	9.7	20.9	7.1	14.0	531,840.

H Market Share Models

In this appendix, we develop the market share models used in our analysis of Chapters 5 and 6.

Market Share Model for Exports—Here we develop the market share model which is used in our computations of Chapter 5.

Definitions—

q_{is} , Q_{is} = Canada's and developed world (including Canada) exports of commodity group i to developing region s.

$q_{i.}$, $Q_{i.}$ = Canada's and developed world exports of commodity group i to the developing world.

$q_{R.}$, $Q_{R.}$ = Canada's and developed world exports of commodity subset R to the developing world.

q , Q = Canada's and developed world total exports to the developing world.

α_{is} = Share of Canadian exports in developed world exports of commodity group i to developing region s.

$\alpha_{i.}$ = Share of Canadian exports in developed world exports of commodity group i to the whole developing world.

$\alpha_{R.}$ = Share of Canadian exports in developed world exports of commodity subset R to the whole developing world.

α = Share of Canadian total exports in developed world total exports to the whole developing world.

The Model—We start with the following identity for Canada's exports of commodity i to region s

$$q_{is} \equiv \alpha_{is} Q_{is}$$

Differentiating this identity, we obtain:

$$\dot{q}_{is} \equiv \alpha_{is} \dot{Q}_s + \dot{\alpha}_{is} Q_{is} \qquad \text{(H.1)}$$

Then adding over all regions s we have:

$$\dot{q}_i \equiv \sum_s \dot{q}_{is} \equiv \sum_s \alpha_{is} \dot{Q}_{is} + \sum_s \dot{\alpha}_{is} Q_{is}$$

Finally, adding and subtracting $\alpha_{i.} \dot{Q}_{i.}$ we have:

$$\dot{q}_i \equiv \alpha_{i.} \dot{Q}_{i.} + \sum \alpha_{is} \dot{Q}_{is} - \alpha_{i.} \dot{Q}_{i.} + \sum \dot{\alpha}_{is} Q_{is}$$

where

$\alpha_i \cdot \dot{Q}_{i.}$ = "World growth effect" on commodity i;

$\sum_s \alpha_{is} \dot{Q}_{is} - \alpha_i \cdot \dot{Q}_{i.}$ = "Market effect" for commodity i; and

$\sum_s \dot{\alpha}_{is} Q_{is}$ = "Competitive effect" for commodity i.

If we aggregate over a subset R of commodities we obtain:

$$\dot{q}_{R.} \equiv \sum_{i \in R} \dot{q}_{i.} \equiv \sum_{i \in R} \alpha_{i.} \dot{Q}_{i.} + \left[\sum_{i \in R} \sum_s \alpha_{is} \dot{Q}_{is} - \sum_{i \in R} \alpha_{i.} \dot{Q}_{i.} \right] + \sum_{i \in R} \sum_s \dot{\alpha}_{is} Q_{is}$$

Now adding and subtracting $\alpha_{R.} \dot{Q}_{R.}$ we obtain:

$$\dot{q}_{R.} \equiv \alpha_{R.} \dot{Q}_{R.} + \left[\sum_{i \in R} \alpha_{i.} \dot{Q}_{i.} - \alpha_{R.} \dot{Q}_{R.} \right] + \left[\sum_{i \in R} \sum_s \alpha_{is} \dot{Q}_{is} - \sum_{i \in R} \alpha_{i.} \dot{Q}_{i.} \right] + \sum_{i \in R} \sum_s \dot{\alpha}_{is} Q_{is}$$

In our calculations, we carry out this computation for R = 1, 2, and 3 in accordance with Statistics Canada grouping of commodities by stage of fabrication, where: 1 = raw materials, 2 = semi-finished products, and 3 = finished products.

Finally, we can add now for all commodities to obtain a decomposition of the total change in Canada's export. Thus we have:

$$\dot{q} \equiv \alpha\dot{Q} + \left(\sum_i \alpha_{i.}\ \dot{Q}_{i.} - \alpha\dot{Q}\right) \quad \text{(H.2)}$$

$$+ \left[\sum_i \sum_s \alpha_{is}\ \dot{Q}_{is} - \sum_i \alpha_{i.}\ \dot{Q}_{i.}\right]$$

$$+ \sum_i \sum_s \dot{\alpha}_{is}\ Q_{is}$$

where

$\alpha\dot{Q}$ = "world growth effect"

$\sum_i \alpha_{i.}\ \dot{Q}_{i.} - \alpha\dot{Q}$ = "commodity-composition effect"

$\sum_i \sum_s \alpha_{is}\ \dot{Q}_{is} - \sum_i \alpha_{i.}\ \dot{Q}_{i.}$ = "market effect"

$\sum_i \sum_s \dot{\alpha}_{is}\ Q_{is}$ = "competitive effect"

Equation (H.2) gives only a decomposition of a country's change in exports to a given market, but no cause-effect relation should be inferred from this decomposition. The results are also sensitive to whether the "commodity composition effect" or the "market effect" is calculated first.

In the above computation, the "commodity effect" is computed first. Now we will develop a decomposition of export changes with the "market effect" computed first. From equation (H.1) adding over commodities in each of our three subsets, we will have:

$$\dot{q}_{Rs} \equiv \sum_{i \epsilon R} \dot{q}_{is} \equiv \alpha_{Rs}\ \dot{Q}_{Rs}$$

$$+ \left[\sum_{i \epsilon R} \alpha_{is}\ \dot{Q}_{is} - \alpha_{Rs}\ \dot{Q}_{Rs}\right]$$

$$+ \sum_{i \epsilon R} \dot{\alpha}_{is}\ Q_{is}$$

$$R = 1, 2, 3$$

Then, adding over the subsets R we obtain:

$$\dot{q}_{.s} \equiv \alpha_{.s}\ \dot{Q}_{.s} + \left[\sum_R \alpha_{Rs}\ \dot{Q}_{Rs} - \alpha_{.s}\ \dot{Q}_{.s}\right]$$

$$+ \left(\sum_i \alpha_{is}\ \dot{Q}_{is} - \sum_R \alpha_{Rs}\ Q_{Rs}\right)$$

$$+ \sum_i \dot{\alpha}_{is}\ Q_{is}$$

Finally, adding over the s regions we obtain:

$$\dot{q} \equiv \alpha\dot{Q} + \left(\sum_s \sum_R \alpha_{Rs}\ \dot{Q}_{Rs} - \alpha\ \dot{Q}\right) \quad \text{(H.3)}$$

$$+ \sum_s \left(\sum_i \alpha_{is}\ \dot{Q}_{is} - \sum_R \alpha_{Rs}\ \dot{Q}_{Rs}\right)$$

$$+ \sum_s \sum_i \dot{\alpha}_{is}\ Q_{is}$$

If we compare equations (H.2) with (H.3), we observe that the second, third, and fourth terms in the right-hand side are different in both cases. There is no criteria to choose a priori between equations (H.2) and (H.3). Therefore, in our computation, we will use both formulas and then we will study how sensitive our results are to the order of the computations. Finally, each of the separate effects are measured starting with flows in constant prices. To account for changes in exports, at current dollar values, we add a "price effect" which is given by the difference between the value of exports at current prices and the value of exports at base year prices. Thus, if X_0, X_1 and P_0, P_1, are the quantity and prices for two periods of a commodity, the price effect is given by: $P_1X_1 - P_0X_1$.

Market Share Model for Canadian Imports: Definitions—

M_{is} = Imports of commodity i from region s.
M_{Gs} = Total imports of commodities belonging to group G from region s.
M_G = Total imports of group G commodities.
β_{is} = Share of region s in the imports of commodity i.
β_{Gs} = Share of region s in the total imports of commodity group G.

Where s = 1,2. . . 12 refers to the twelve developing regions, s = 13 refers to the whole developing world and s = 14 to the developed world. G = 1,2,3,4, . . . refers to different commodity groups.

The Model—We start with the following identity for Canada's import of commodity i from region s.

$$M_{is} \equiv \beta_{is}\ M_i$$

Differentiating this identity we obtain the following expression:

$$\dot{M}_{is} \equiv \dot{\beta}_{is} M_i + \beta_{is}\dot{M}_i \quad \text{(H.4)}$$

Aggregating equation (H.4) for all imports belonging to commodity group G and with origin in region s we obtain, after some simple manipulations:

$$\sum_{i \epsilon G} \dot{M}_{is} \equiv \beta_{Gs}\dot{M}_{Gs} + \left(\sum \beta_{is}\dot{M}_i - \beta_{Gs}\dot{M}_G\right)$$

$$+ \sum_{i \epsilon G} \dot{\beta}_{is} M_i \quad \text{(H.5)}$$

Then, from here we have:

$\beta_{Gs}\dot{M}_{Gs}$ = "Canada growth effect" for commodity group G.

$\sum_{i\epsilon G} \beta_{is}\dot{M}_i - \beta_{Gs}\dot{M}_G$ = "Commodity composition effect" for commodity group G.

$\sum_{i\epsilon G} \dot{\beta}_{is}M_i$ = "Competitive effect" for commodity group G.

Expression (H.5) is computed for each of the twelve regions in the developing world, for the aggregate of the twelve developing regions, and for the developed world.

In our computations, two periods are used: annual average of the years 1966-70 and the annual average of the years 1971-75. As in the export model of the previous section, a complication arises because the model of equation (H.5) is expressed in continuous time. The results in general depend on whether the beginning of period weights, the end of period weights, or a combination of both is used. There is no a priori rationale to choose one set of weights instead of another; therefore, as in the case of the export model, we shall study the influence of the weighting scheme chosen by performing a sensitivity analysis of our results. Finally, each of the separate effects are measured starting with constant prices flows; then to account for current dollar changes in imports we have to add a "price effect." The "price effect" measures the part of the change in current dollars imports that can be accounted for by price changes, keeping the import volume constant.

Notes

CHAPTER 1

1 The OECD work is published in a summary volume by Little, Scitovsky, and Scott (1970), plus five country studies: Bergsman (1970), Bhagwati and Desai (1970), Lewis (1970), Mo-Huan Hsing, Power, and Sicat (1970), and King (1970). Balassa and Associates (1971) is the second of these major studies, whereas the third one by the NBER consists of two synthesis volumes, Bhagwati (1978) and Krueger (1978a), plus nine country studies, Krueger (1974), Michaely (1975), Baldwin (1976c), Leith (1974), Frank, Kim, and Westphal (1975), Bhagwati and Srinivasan (1975), Hansen and Nashashibi (1975), Behrman (1976), and Diaz-Alejandro (1976).

2 For example, Taylor and Bacha (1973), Krueger (1966), Krueger (1974), Leith (1974), Bhagwati and Srinivasan (1975), and Hansen and Nashashibi (1975).

3 On the benefits of export promotion strategies for development, see Bhagwati and Krueger (1973), Krueger (1978b), and Little, Scitovsky, and Scott (1970).

4 See especially Corbo and Meller (1977) and (1978), Krueger (1978), and Nabli (1978).

5 The review by UNCTAD (1976b) of trade in manufactures demonstrates that, even if manufactures reached the target of 25 per cent of developing country exports, the developed countries would still account for 50 per cent of the market.

6 This is not, however, a monolithic view in the third world. In particular, the least developed countries among the LDCs are more concerned with the attainment of self-reliance in goods and less with the issue of alternative strategies for industrialization.

7 The basic statements of NIEO are given in UNCTAD (1976a). For detailed discussion of these statements, historical review of the forces leading to NIEO and evaluations of the entire problem, see the contributions in the volume edited by Bhagwati (1977), as well as those by Lewis (1977) and McCulloch (1976).

8 The only comprehensive analytical listing of such goods is that in Lary (1968); we discuss this further in Chapter 4.

CHAPTER 2

1 In Part II of the study, availability of tariff rates and compatible import data necessitated the use of two slightly different periods—1967-71 and 1972-75.

2 SITC 6 of the UN classification is labeled "Manufactured Goods Classified Chiefly by Materials," which we feel is a rather awkward distinction from SITC 8; hence, for convenience, we will use the term "Manufactured Materials."

3 The values shown in Table 2-3 are taken from Table 2-2 for Canada and from OECD, *Commodity Trade Exports, Detailed Analysis by Products*, various issues, for other countries.

4 The values shown in Table 2-6 are taken from Table 2-5 for Canada and from OECD, *Commodity Trade Exports, Detailed Analysis by Products*, various issues, for other countries.

5 The values shown in Table 2-9 are taken from Table 2-8 for Canada and from OECD, *Commodity Trade Imports, Detailed Analysis by Products*, various issues, for other countries.

6 The values shown in Table 2-12 are taken from Table 2-11 for Canada and from OECD, *Commodity Trade Imports, Detailed Analysis by Products*, various issues, for other countries.

CHAPTER 3

1 See Stern (1973), Section III, for a summary and detailed references. A study of estimates of ERP for Canada is found in Wilkinson and Norrie (1975). For studies on developing countries, see Balassa (1971) and Little, Scott, and Scitovsky (1970).

2 It is not our purpose here to discuss the reasons for tariff structures being what they are, but one may mention that the most common view in the literature is the protection of jobs via high tariffs on goods that are intensive in unskilled labour. For the United States, see Salant and Vaccara (1961), Cheh (1974), Fieleke (1974), and Bale (1977); for Europe, see Constantopoulos (1974), and Riedel (1977). Caves (1976) has recently explored the issue for Canada, finding generally similar results to others: unskilled labour intensity is, if not the major, certainly a significant causal factor. But Helleiner (1977a) and (1977b) notes that though unskilled labour intensity has been found to be the most significant explanation of high tariff levels, more recently, multinational firm interests have sometimes overridden the newly protectionist interest of labour in both Canada and the United States.

3 On the use of nominal versus effective rates for estimating bias, see Balassa (1968) and the subsequent exchanges with Leith and Reuber, plus Johnson (1967). On the validity of ERP estimates as proxies of general equilibrium effect, see the discussion in the following section of this chapter.

4 See, for example, Economic Council of Canada (1975), pp. 10-12; Helleiner (1977), p. 103, notes that recent

discussions focus less on the overall level of protection, and more on its structure; agreeing that "sizable tariff disparities" are the rule, a Brookings (1972), p. 14, Tripartite Report consequently cautions that the 6 to 12 per cent range of tariffs on processes goods does not mean "that tariffs after the Kennedy Round no longer matter."

5 See Stern (1973), Section III, for a review of the ERP literature.

6 If for two goods $t_1 = .2$, $t_2 = .1$, $w_1^M = .2$, $w_1^M = .8$, $w_1^L = .8$, $w_2^L = .2$, and $\mu_1 = 1.0$, $\mu_2 = 2.0$, then $\psi^M = .12$, $\psi^L = .17$ showing "bias" against L, but $\delta^M = .18$, $\delta^L = .17$, reflecting a slight "bias" against M.

7 Resource limitations precluded an analysis of all MDCs. We chose the EEC rather than the United States, as the former appears to have the lowest level of tariffs among advanced countries; that is evident in the figures of Economic Council of Canada (1975), Chapter 2, p. 11.

8 This is evident from the study of Wilkinson and Norrie (1975).

9 For a recent evaluation, see J. Tumlir and L. Till, "Tariff Averaging in International Comparisons," in Grubel and Johnson (1971).

10 Cline et al. (1976), Baldwin and Lewis (1976), and Baldwin and Murray (1977); for Canada, see Boadway and Treddenick (1975), and Chand, Danielson, and Smith (1976).

11 Difficulties in obtaining eleasticity values precluded similar computations for the EEC.

12 The original figures shown are not consistent with the LDC or MDC rates since the world rate is a weighted average of the two. Assuming the first two are correct and using the weights shown in Reuber (1968) Table VII, we recalculated these values as shown in the brackets. The 4.8 value shown is not consistent with the separate values shown for LDCs paying MFN and BP rates. Assuming these are correct (and they seem reasonable relative to 1966 rates) and using the implicit weights from the 1966 part of Table VIII in Reuber (1968), 0.66 and 0.34, respectively, we recalculated the value yielding (9.6). In private correspondence, Reuber has indicated to us that the 9.6 value is probably more reasonable. The world estimates are consequently adjusted to (8.9). The sources for the figures in Table 3-2 are found in Reuber (1964), p. 14; Reuber (1968), p. 689, typing error of original corrected for LDCs and Lary goods; Yadav (1972), p. 73; Reuber (1968), p. 689; Bain (1976), p. 14; and our own figures are taken from Chapter 4 below.

13 A statement of this "bias in liberalization" is discussed, for example, in Helleiner (1977).

14 Reuber emphasizes the importance of BP rates to many LDCs and contends that the relevant comparison is between BP rates for LDC and MFN rates for MDCs. This indeed shows a favourable bias—6.5 versus 9.1. However, the BP rate for both is, in our view, the correct comparison, and this shows no bias with a value of 6.6 for MDCs.

15 Careful reading of Lary's work will make it clear that he excluded natural resource goods not because LDCs did not have a comparative advantage, but only to permit a focus on manufacturing potential.

CHAPTER 4

1 The rates shown are actually computed using 4-digit tariffs and imports within each group.

2 This fact did not manifest itself in the study by the Economic Council of Canada (1975), p. 13, where semi-finished goods are shown to have a lower rate than finished ones. There, the rates are for dutiable goods only, while our calculations are for all goods; hence, the greater protection on semi-finished goods comes from a greater coverage outweighing the lower value on tariffs on specific items.

3 Appendix Table D-1 gives values at 2-digit SITC, though the discussion in the text will often refer to 3- or even 4-digit commodities. Space restraints preclude presentation of all the data, but these are available from the authors on request.

4 The very low tariff rate for fuels is a key factor in some of the results shown below on bias. Given the high weight of this group (60 and 55 per cent, respectively), it is not surprising that globally we find no bias in tariffs against LDCs; in fact, we find a bias against advanced countries. Given the geographic concentration of petroleum resources, the inclusion of this product strongly distorts any tariff height measures purporting to represent the position of developing countries in general. We expand on this in later discussion.

5 The greater Canadian dispersion in SITC 7 has an important effect upon the bias issue. The tariff average for SITC 7 is lower in Canada using world basket weights (5.0 versus 8.3 per cent), but weighting by the LDC basket of imports (see below), the tariff in Canada is higher (10.1 versus 8.9 per cent). This manifests the need to analyse tariff height averages at high level of disaggregation, because of the well-known fact that in Canada "there is very wide dispersion of rates from low to high levels compared with the tariff schedules of most advanced countries" (Economic Council of Canada, 1975, p. 11).

6 Yadav, though, takes a strong position on the bias issue when he concludes that Canada "discriminates considerably against the imports of manufactured goods from LDCs" (Yadav, 1972, p. 70); nevertheless, he admits that this "does not necessarily imply an overall discrimination against the imports of all products" (Ibid., p. 82).

7 The discussion here was elaborated more fully in the authors' first draft of this study, which was presented to the Economic Council of Canada in November 1977; see Chapter 8 of that version.

8 Roughly, the criterion was goods for which 10 per cent or more came from LDCs; raw materials were excluded, but goods with very high growth and shares lower than 12 per cent were included.

9 The effect of changes in import baskets over time is very minimal; there is in both cases a small decline in tariff height facing LDCs (from 5.34 and 3.1 per cent), and a slight rise in that facing MDCs (from 6.48 and 7.27 per cent, as shown in Appendix Tables F-1 and F-2.

10 That such a shift occurred is evident in Appendix F. LDC and MDC values generally increased and, given the same tariffs, this could be only because the weights shifted to high-tariff items.
11 This was explained more fully in our report to the Economic Council of Canada in 1977, Chapter 8, Table 8-2. For Canada, the share of Lary goods in global imports fell from 46.3 to 44.1 per cent, while for the EEC it rose slightly from 28.6 to 29.5 per cent.
12 Ibid.
13 *The Globe and Mail*, April 16, 1976, p. B2.
14 *The Globe and Mail*, October 19, 1976, p. B1; and *Montreal Star*, December 11, 1976, p. C1.
15 *The Globe and Mail*, October 16, 1976, p. 7.
16 The major high-tariff items in question are (at 2-digit SITC and with tariff rates for Canada/EEC shown in brackets): 65—Textiles, Yarns, Fabrics (20/13); 69—Manufactures of Metal (11/8); 82—Furniture (19/8); 84—Clothing (24/16); 85—Footwear (25/19); and 89—Miscellaneous Manufactured Articles (11/10). The weight of all these items together in the import basket (excluding petroleum) for developing countries was for 1972-75 about 25 per cent in Canada and about 10 per cent in the EEC.
17 The reconciliation may lie in the fact that we were unable to prepare the NTB list for the EEC as accurately as for Canada because of resource limitations.
18 To maintain comparability between import and export weighting estimates, we show in Table 4-4 the HM values for the 1967-71 period, as export weights could not be obtained beyond 1972.
19 Statistics Canada, *Imports 1973-1975*, Statistics Canada cat. no. 65-203, Table 3.
20 These conclusions are based on our analysis of the GATT notifications procedure, whereby individual members have notified or "complained" to GATT about the use of NTBs by other members, which were explained in greater detail in Chapter 11 of the original draft of this study, which was prepared for the Economic Council of Canada in November 1977.

CHAPTER 5

1 On this method, see especially Junz and Rhomberg (1965), and De Vries (1967). For more recent evaluation, see Magee (1975).

CHAPTER 7

1 For a summary of available studies in Canada and elsewhere, see Stern, Francis, and Schumacher (1976). Later in this chapter, we present several of these studies to compare with our elasticity values.
2 Cline et al. (1976), pp. 19-21, also used the Buckler and Almon study, but for 21 sectors only. Similarly, Deardorff, Stern, and Baum (1976) rely on this plus other studies summarized in Stern et al. (1976) to obtain values for 22 sectors. Only Baldwin and Lewis extend the limited elasticity detail to a greater number of commodity groups.
3 Where one good only had an elasticity value in Canada, but this and a related good were given in Buckler and Almon, we used the ratio in the latter study to assign approximate values to the second good in Canada.
4 It would be exactly the same for an imposition of tariffs because the tariff averaging weights (t_1, t_2) are equal to the terms for percentage price change in equation (3.11). However, for a cut in tariffs, the percentage price change terms are $t_1/(1 + t_1)$ and $t_2/(1 + t_2)$, whereas the weighting terms remain t_1, t_2.
5 Using earlier terminology, calling the two goods 01, 02, and their sum 0, and letting the weights for region j be w^j_{01}, w^j_{02}, w_{01}, w_{02}, the import cut to j of a tariff imposition is, disaggregated:

$$\Delta M^j_0 = C0\ [(t_{01} \cdot \frac{M^j_{01}}{M0} + t_{02} \cdot \frac{M^j_{02}}{M0})]\, M0$$

and aggregated:

$$\Delta M^j_0 = C0\ [(w_{01}/w^j_{01} \cdot t_{01}\ \frac{M^j_{01}}{M0} + w_{02}/w^j_{02} \cdot t_{02} \cdot \frac{M^j_{02}}{M0})]\, M0$$

6 Some omissions here are the values in CANDIDE and other simulation models for Canada, because these used somewhat different classification schemes.
7 In Table 7-1, where a range of values is shown, the lower value is for semi-finished goods in the group, the higher one for finished goods. In the Balassa and Kreinin estimates for all goods, the average was calculated assuming values of .90 for SITC (0+1); in other cases of incomplete coverage, it was felt that too many items were missing to follow such a procedure and so a range of .74 to 1.69 is shown. For the seven studies besides our own, values were taken directly from the published work itself and all are summarized in Stern et al. (1976), whose "best" estimate values (based largely on the six other studies shown) are presented in column eight of Table 7-1.
8 Though some tariff equivalent estimates of NTBs are available in Yadav (1972) and in Dauphin and Audet (1976), the reclassification necessary was thought to be too costly in time for the likely benefits of such an exercise. Further, as Chapter 4 shows, the NTB goods were high-tariff items, and much of the evidence supported the Industry, Trade and Commerce view of "diversion" of sensitive goods to Canada, suggesting that quotas may not have been so "effective" as Yadav (1972), pp. 79-81, found for 1964.
9 Among these are Baldwin and Lewis (1976), Cline et al. (1976), Deardorff, Stern, and Baum (1976), U.S. Tariff Commission (1972), and Chand, Danielson, and Smith (1976).
10 Initiated by the Tokyo Declaration of the ministerial meeting in Tokyo, September 1973, and widely regarded as the successor in importance to the preceding Dillon and Kennedy Rounds. Because sessions are mostly located in Geneva, confusion in labeling sometimes arises. A good background is given in GATT (1976).

11 Since our initial draft of this report was completed, statements from Geneva suggest a movement to adoption of the Swiss formula: 40 per cent average cuts, graduated with higher cuts for high-tariff items. The linear cut formula appeared the likely candidate when our analysis was done, and it is possible that our results slightly underestimated benefits to LDCs as high-tariff manufactured items are their special bane. However, this effect is balanced off on two counts. First, the formula is for 40 per cent average while we applied 50 per cent cuts. Second, many of the high-tariff, high-elasticity goods of special significance to LDCs are either subject to NTBs or are exempt from cuts regardless of the formula chosen.

12 See, for example, Wilkinson and Norrie (1975), p. 68, and Williams (1976), p. 63. The items excluded are shown as Schedules A and B in Appendix E. They account for about 22 and 8 per cent of imports from the LDCs and the world, respectively.

13 Act to amend the *Customs Tariff*, assented to April 19, 1973.

14 UNCTAD (1976a) Add. 1, Part II, p. 14. In general, exclusions are said there to account for three-quarters of dutiable imports to MDCs.

15 Though this should be obvious from a much simpler but very revealing statistic shown in UNCTAD (1976b), Table 21, p. 25, Canadian imports of manufactures from developing countries in 1973 amounted to $26 per capita. Recall that tariffs on non-manufactures are already low and therefore their reduction would have far less impact.

16 Appendix G presents a detailed table for each of the cells in Table 7-3, giving figures of percentage change in imports for each of the 15 regions, by SITC 1-digit category, stage of fabrication, Lary and alternative goods. Also there the absolute values of the increments in thousands of dollars are shown, giving a world total for each category of goods, and a total for all goods by region.

17 Jaleel Ahmad has pointed out to us that small MDCs such as Canada or Scandinavia are likely to experience larger diversion effects. However, even if diversion is as large as creation, this should still mean that GSP import is quite small.

18 Our own estimates are based on Hypotheses I and VIII, respectively; the Cline values are taken from the Canadian Formula Cut and full formula cut, respectively, as found in Cline et al. (1976), p. 18; for Chand, Danielson, and Smith, elasticities for selected goods are estimated as explained in Section f, Chapter 7, and elasticity values are taken from Table 5, p. 48; values for Boadway and Treddenick were calculated from their Table 3 (1975), weighting the percentage rates by industry there using 1961 input-output table imports (this gave a value of 50.0, not surprising as elasticities of exports and imports used were both 10. To conform with more usual values of around 2, we divided this result by 5. As the effects are not linear, however, and their elasticities not fully comparable with those used elsewhere, we show the final adjusted value in brackets); the range of values for Baldwin and Lewis (1976) are alternative elasticity estimates I, II and III (estimates IV and V with very high—about 3.5 overall—and very low—about 0.3 overall—elasticities are not reported here); and for Cline et al. (1976), for the 50 per cent cut, the first figure shown is actually their Canadian formula 3 and the second is their future United States formula 8, while the 100 per cent cut is their formula 4.

19 Deardorff, Stern, and Baum (1976) results are not reported here as their paper gives values only for the net trade balance and not separate ones for imports.

20 The Boadway and Treddenick (1975) estimates used what seemed to be extremely high and unlikely elasticities, or very low ones (1, 10, or 25), and gave either a small negative import change or a very high 50 per cent. We adjusted one of their estimates linearly to an implicit elasticity of 2 but, as their model is not linear, we feel a bracket is warranted around this number in Table 7-5 to signal it as least comparable.

21 As Stern (1973), p. 866, concludes in his survey of the literature, "most estimates of . . . the gains from trade liberalization are small in absolute terms and in relation to a country's GNP."

22 As shown in Appendix Table G-1, IA and IB Lary, the increase in Canadian imports of all goods from other African countries would be a meagre 0.2 per cent under the status quo market share formula for Tokyo I tariff cuts. While this increase would rise to 1.2 per cent under the B Lary market share formula, it is still far below the average for LDCs both in the absolute size of improvement and in the ratio to the increase under the status quo share. Nevertheless, this increase would be significant as far as the region itself is concerned.

Chapter 8

1 One observes in the Baldwin and Lewis model that the resulting formula for trade creation differs from our equation (3.11) only formally, the former defining an income compensated elasticity, ours being an uncompensated one. They go on to state, however, that the difference between the two elasticities is minimal (a difference of 0.01 on a value of about 2.0), and end up using the only one that they recognize as observable — the uncompensated one, thereby eradicating any important difference between assuming homogeneous or substitutable goods (Baldwin and Lewis, 1976, p. A-5).

2 But Baldwin and Murray (1977) do devise an ingenious indirect estimate of trade diversion as equal to trade creation times the ratio (imports from non-beneficiaries/domestic production of the good). Difficulty of reclassification between commodity and industry categories precludes our following this lead for Canada.

3 Clague (1971a) speculated that these elasticities are lower for LDCs, a fact at odds with the rapid growth rates of LDC exports. Finger (1976) finds evidence that LDC elasticities are "apparently larger" (p. 92), though not significantly so. It would seem at least reasonable, then, to presume the elasticities are the same for both regions Canada's small size further justifies the horizontal supply curve usual to small open economy models.

4 Clague (1971a), p. 386; but Holden (1978) has shown that the trade diversion effect, though clearly positive, is not large.

5 They find a value of erosion is about $32 million relative to a GSP gain of about $500 million; we believe that they underestimate the effect, assuming it reduces only the trade diversion, when, in fact, it will also affect trade creation, as our equations in Appendix E show, because the price change is smaller when a cut is made on a lowered tariff.

6 Dissent on this is not difficult to find; Bronfenbrenner (1976) is a case in point. To be fair Bronfenbrenner seems to make more the point that preferences should not be given as "retribution" of past MDC maltreatment of the third world but on their own economic merit — if any. An excellent discussion of the international debate along these lines is to be found in Bhagwati (1977), Chap. 1.

7 This can of course be said to be in the spirit of an even earlier scheme of the kind, the Commonwealth system.

8 Continuing to assume no trade diversion between the two groups.

9 Growth rates are calculated from absolute values of effects divided by total U.S. imports of 1971 of $12 billion from LDCs and $45.5 billion globally except for two which gave values for 1970 for the denominator. The sources are Clague (1971), p. 38, Table III; U.S. Tariff Commission (1972), p. 56, Table 13, and p. 59, Table 15; Baldwin and Murray (1977), p. 37, Table I; and Finger (1976), p. 607, Table I.

10 Recall that the absolute values for Canada were $35.8 million and $78.8 million.

11 An initial investigation of this sort has been done using an input-output framework by Daphne Meredith, (1978). She finds, for example, that, while the full (direct and indirect) impact of 100 per cent cuts for LDCs in Hypotheses VIII and IX is about 40,000 lost jobs or about 0.7 per cent of the aggregate, the share for manufacturing industries is over 2 per cent, and for some, such as knitting mills, it is 10 per cent or more. It should be noted that this is an upperbound estimate of job losses, since the analysis assumed all import charges to be exogenous and did not allow for reduction of intermediate demand imports, for example, less leather for fewer shoes.

12 We note a valid point made to us in correspondence by Jaleel Ahmad: OAP exports may be different in as much as they are an extension of the U.S. domestic pattern of production. Of course, the other side of the argument is Vernon's, namely, that this pattern is no longer in the U.S. comparative advantage, and is becoming so for the LDCs. Nevertheless, we agree that the distinction bears some investigation as to domestic and developmental effects.

CHAPTER 9

1 This is not reported on here, the conclusion being based on an analysis of NTBs detailed in Chapter 11 of the original version of our study sent to the Economic Council of Canada in November 1977.

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