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**REGIONAL TRADING
ARRANGEMENTS AMONG
DEVELOPING COUNTRIES:
THE ASEAN EXAMPLE**

Dean A. DeRosa

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FOREWORD

In January 1992, the Association of Southeast Asian Nations (ASEAN) announced its intention to form the ASEAN Free Trade Area (AFTA). Covering intrabloc trade in both agriculture and manufactured goods, the AFTA plan was inaugurated in 1995, and the signatory countries have made a commitment to implement the plan completely by the year 2003. Against the background of increasing regionalism in the world economy, the new ASEAN trading arrangements provide an interesting and important laboratory for considering how preferential trade liberalization to foster closer economic relations among neighboring developing countries affects agriculture, trade, and economic welfare.

In this report, Dean A. DeRosa investigates whether the AFTA plan should be expected to significantly reduce the disincentives to agriculture in the major ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore, and Thailand). More generally, he examines whether the new free trade area is likely to promote production, consumption, and trade by the five major ASEAN countries in a manner consistent with the aims of multilateralism, especially the most-favored-nation principle of nondiscriminatory trade relations that underlies the General Agreement on Tariffs and Trade and the new World Trade Organization. In addition to providing quantitative analysis of these issues using a trade-focused computable general equilibrium model of the ASEAN countries, DeRosa reviews the economic theory of preferential trading areas and the history of ASEAN efforts at regional economic cooperation.

This report is an early product of IFPRI's recently established program of multicountry studies on regional integration, agricultural trade, and food security in developing countries, which aims to analyze the variety of experiences with regional schemes for economic cooperation and their combined implications for world agriculture and international trade. The multicountry modeling approach employed here is also being used in IFPRI studies of regionalism in other parts of the world. This study, and those that follow, should assist agricultural policy officials, as well as trade and macroeconomic policymakers, in developing countries to assess the economic implications of regionalism carefully and to make better-informed judgments about the desirability of pursuing regionalism through preferential trading arrangements compared with continuing efforts toward multilateral approaches to trade liberalization.

Per Pinstrup-Andersen
Director General

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This study was supported by core resources of IFPRI obtained through the Consultative Group on International Agricultural Research. Though it addresses the current and important issue of regional trading arrangements among developing countries and the implications of such arrangements for agricultural development and trade in developing countries, the study is a natural extension of my longstanding interest in the countries of the Asia-Pacific region and in the interrelationships among sources of comparative advantage, protection, international trade, and economic welfare. IFPRI provided me with a welcome and positive environment for undertaking this study of the new ASEAN Free Trade Area and for appreciating more fully the importance of agriculture to the development prospects of low-income countries in other regions as well as Southeast Asia.

Two outside reviewers and several IFPRI colleagues made invaluable contributions to the development of the study and its presentation. The two reviewers from outside of IFPRI, Jaime de Melo and Hal Hill, were particularly helpful in their comments, pointing to some important areas for improvement while lending strong encouragement for the aim and general approach of the analysis. My colleagues in the Trade and Macroeconomics Division at IFPRI, Romeo Bautista and Sherman Robinson, also lent valuable support, advice, and assistance. Among other IFPRI colleagues, Ousmane Badiane, Howarth Bouis, Christopher Delgado, and Mark Rosegrant must be singled out for special thanks, for their thoroughgoing and always helpful reviews of the study manuscript following the guidelines of the Publications Review Committee at IFPRI. Finally, I wish to thank Marcelle Thomas, without whose research assistance the quantitative analysis of the study could not have been accomplished.

This study is dedicated to the memory of my mother, whose love and support also contributed in important ways to the study.

Dean A. DeRosa

1

SUMMARY

Measured by the growth of world trade relative to output, the pace of economic integration in the world economy slowed appreciably during the 1970s and 1980s. To reverse this trend if possible, the Uruguay Round of multilateral trade negotiations was convened in 1986 under the auspices of the General Agreement on Tariffs and Trade (GATT). The overlong duration of the Uruguay Round negotiations, which were not concluded until the end of 1993, encouraged a number of countries to explore bilateral approaches to expanding their economic relations, particularly the formation of regional trading arrangements. These economic arrangements, however, are fundamentally discriminatory in nature, contradicting the most-favored-nation (MFN) principle of the GATT, which requires its members to levy tariffs or other import restrictions without regard for country of origin and thereby to extend equal market access to goods from all exporting countries. Thus, regional trading arrangements pose a fundamental challenge to the global trading system and the objective of achieving economic gains from greater integration of the world economy on a multilateral basis.

The recent growth of interest in regional economic arrangements, manifested particularly in agreements to establish a free trade area in North America (NAFTA) and a "single economic market" in Western Europe, is not limited to industrial countries. Among developing countries, the preferential trading arrangements and related regional investment programs of the Association of Southeast Asian Nations (ASEAN) are particularly prominent. Broadly speaking, the ASEAN countries—Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand—have achieved robust economic performance during the past 25 years, and the contribution of the ASEAN economic arrangements to this performance is of wide interest to policymakers in developing regions. Moreover, interest in the ASEAN countries and their economic arrangements was heightened in 1992 by the announcement of their intention to establish a new free trading area, the ASEAN Free Trade Area (AFTA).

With the exception of Singapore, the ASEAN countries are mainly low- and middle-income developing countries whose economies share many similarities related to their geographic location as well as common aspects of their culture, history, and economic and social development. Given their high population levels, by comparison with not only the major industrial countries but also most countries in Africa, Latin America, and the Middle East, the ASEAN countries have a comparative advantage in the production and international trade of many labor-intensive manufactures. Notwithstanding the steady pace of their industrialization and some significant reserves of mineral fuels and ores, however, the ASEAN economies are still based heavily on agriculture, with cultivation and exports devoted in large measure to tropical crops and related products.

The trade relations of the ASEAN countries are also shaped by political factors. In many instances using quantitative restrictions and other nontariff barriers to

imports, these countries hinder trade in manufactures in order to protect favored domestic industries. Restrictions are also placed on imports of many cereal grains and other food commodities—even to a degree in Singapore, the most outward-oriented ASEAN country.

ASEAN was founded in 1967, mainly out of concern for political security in Southeast Asia. Today, other dimensions are arguably more important to the association, especially the ASEAN economic arrangements to promote intrabloc cooperation in investment and trade. The ASEAN schemes to coordinate investment projects, which were established mainly to attempt to increase the complementarity of economic structures in the ASEAN countries, have proven particularly unsuccessful because of the effective opposition of national interests concerned for the profitability of their local investments.

The ASEAN system of preferential trading arrangements (PTA), established in 1977, sought to expand intra-ASEAN trade by reducing tariff and nontariff barriers to goods produced in member countries. Only negligible increases in intrabloc trade, however, have been achieved because of persistent, though generally declining, reliance on administered protection in many ASEAN countries and, more fundamentally, because of the opposition of many of the same vested interests that have prevented the success of the coordinated ASEAN investment programs.

Concerned about increasing bilateralism in the trade relations of the major industrial countries and the uncertainty of a successful outcome to the Uruguay Round, the ASEAN heads of state signed an agreement to establish the ASEAN Free Trade Area in January 1992. Under the new trading arrangement, beginning in 1995 each ASEAN country will seek to reduce the level of its tariffs on imports of manufactures as well as on highly protected categories of agricultural and other natural resource-based commodities, to a range of 0 to 5 percent by the year 2003. The plan also calls for the simultaneous elimination of nontariff barriers to intra-ASEAN trade.

International trade theory points to the fundamental importance of comparative advantage for determining the economic benefits of preferential trading arrangements, especially among developing countries from the same region whose relative endowments of primary resources (such as land, labor, and accumulated physical and human capital) are often similar. But assessing the economic benefits of regional trading arrangements, particularly for policymakers, ultimately calls for applied economic analysis. This study, therefore, offers a quantitative analysis of the medium- to long-term economic effects of the AFTA plan.

The analysis employs a computable general equilibrium (CGE) model of the intrabloc and multilateral trade relations of the ASEAN countries. This ASEAN trade simulation model is similar in many regards to other multisector CGE models applied widely in analyzing trade and development policy issues. Among other attributes, it accounts explicitly for nontariff as well as tariff barriers in the ASEAN countries and their principal trading partners, enabling it to gauge the economywide and sectoral effects of simultaneously reducing tariffs and nontariff barriers on either a preferential or nondiscriminatory basis.

Simulations of trade liberalization scenarios representing variants of the AFTA plan find that, by virtue of its wide coverage of traded goods and its elimination of nontariff barriers, the AFTA plan is mainly trade-creating. Indeed, when extended to cover all trade within ASEAN, the plan is estimated to expand total intrabloc trade

by as much as 19 percent (US\$2.9 billion). In addition, the sectoral expansion of production and exports by the ASEAN countries under the AFTA plan is found to bear close similarity to that expected under MFN liberalization, and the bias against agriculture and other natural resource-based sectors is found to be reduced, albeit by margins that are substantially narrower than under nondiscriminatory, or MFN, liberalization.

Despite these results, the analysis raises concerns about important qualitative as well as quantitative aspects of the expansion of ASEAN trade relations under AFTA. In particular, the analysis reveals that the sectoral adjustment of consumption and imports under the AFTA plan diverges perceptibly from that under MFN liberalization. The discriminatory nature of the AFTA plan is principally responsible for this outcome, abetted under some variants of the plan by terms that would limit the liberalization of ASEAN trade relations to intrabloc trade in manufactures only. Overall, the AFTA plan is found to yield generally only small improvements to economic welfare in the ASEAN countries, except in Singapore and to a lesser extent Malaysia, which by virtue of their initially relatively open economies stand to gain substantially from ASEAN-wide trade diversion as well as trade creation. Finally, though it results in a smaller gain in intra-ASEAN trade (US\$1.7 billion), an alternative policy of unconditional MFN liberalization of ASEAN trade relations results in an estimated gain in total ASEAN trade with the world (US\$9.1 billion) that is more than three times larger than that under the AFTA plan (US\$2.4 billion), because it exploits wider differences in the sources of international comparative advantage between the ASEAN countries and their international trading partners, especially the major industrial countries.

The findings of the study cast doubt on the desirability of pursuing regional economic arrangements more widely among developing countries. To the extent, however, that they are driven by many of the same political economy factors as those behind AFTA, including especially reduced commitment to multilateralism in the world economy, preferential trading arrangements in other developing regions are likely to continue to enjoy considerable favor among policymakers, even though they have little prospect of achieving appreciably greater gains for agriculture and national economic welfare than found in the ASEAN example. From an international political economy perspective, a more interesting question is whether the emerging global competition between multilateralism and regionalism might ultimately lead to a desirable outcome for the world economy, namely, one that largely attains the goals of multilateralism and reduces the bias against agriculture in developing countries.

2

THE INTERNATIONAL SETTING AND THE RESURGENCE OF REGIONALISM

Waning Multilateralism

The pace of economic integration among countries in the world economy slowed during the 1970s and 1980s, limiting the realization (and enjoyment) of economic gains from greater consumption, specialization in production, and international trade.¹ The advent of new forms of protectionism is widely held responsible for inhibiting greater expansion of world trade (for example, Salvatore 1986). Like the Tokyo Round before it, the Uruguay Round of multilateral trade negotiations was convened under the auspices of the General Agreement on Tariffs and Trade (GATT) to arrest and, if possible, reverse the slowdown in global economic integration, through multilateral consensus to liberalize world trade on several fronts, including trade in agriculture, textiles and apparel, and services.

Begun in 1986 and finally concluded in December 1993, the Uruguay Round was hindered from the outset by the thorny problem of attempting to liberalize international trade in agriculture against the stalwart political opposition of vested interests in the farm sectors of the major industrial countries. But systemic factors also contributed to the apparent diffidence of the contracting parties during the overlong negotiations. In particular, as Bhagwati (1991) and Finger (1991) emphasized for instance, the negotiators seem to lose sight of two key principles of the GATT: reciprocity and globalism. The first principle refers to the mutual exchange of trade "concessions" between negotiating countries, while the second refers to the extension of agreed reductions in trade barriers on a nondiscriminatory, or most-favored-nation (MFN), basis to all potential trading partners. In past rounds of multilateral trade negotiations, the observance of these two principles contributed to achieving substantial reductions in levels of protection in the major industrial countries, especially for the vast number of manufactured products that these countries export among themselves today.

High nominal and effective rates of protection, of course, are still enforced selectively against imports of manufactures in the major industrial countries, in most instances by the application of nontariff barriers to imports and "gray area" measures such as voluntary export restraints that also significantly distort patterns of trade and production among countries. The agriculture sector has historically remained outside of the GATT process of multilateral trade negotiations, and, as a result, the protection

¹In contrast to the experience during the 1950s and 1960s, when the growth of world trade outdistanced the growth of world output by about 2.5 percentage points per year, during the 1970s and 1980s the average rate of growth of world trade fell to only about 1.0 percentage point per year above that of world output (excluding services) (GATT 1990, Vol. 2, Chart 1.1).

of the GATT process of multilateral trade negotiations, and, as a result, the protection of farm production is generally very high in most industrial countries (Dam 1970; Hathaway 1987).

The slow progress and limited success of the multilateral trade negotiations may also be related to the fact that more than 100 countries were party to the negotiations. This number is substantially larger than in previous rounds because many developing countries participated actively in the multilateral trade negotiations for the first time. But two other aspects of the Uruguay Round negotiations may also have posed important obstacles to success. First, the negotiations, by agreement, proceeded along more than 10 separate tracks, increasing the complexity of striking reciprocal bargains among countries to exchange trade-liberalizing "concessions" across sectors and issue areas. Second, developing countries were reluctant to give up their "special and differential" treatment under the GATT articles (see, for example, Whalley 1990). This reluctance could have limited the extent of their reciprocal bargaining in the negotiations and hence their economic gains from the negotiations on market access and systemic trading issues of particular interest to developing-country exporters. Such issues include agriculture and especially the Multi-Fibre Arrangement (MFA), which regulates the textile and apparel imports of most industrial countries (Hudec 1987). In the end, however, the inclusion in the final agreement of chapters liberalizing agricultural trade (and related domestic distortions) and phased elimination of the MFA must be credited in no small part to the active participation of a number of developing countries in the overall trade negotiations and in influential negotiating blocs, such as the alliance of agricultural exporting countries known as the Cairns Group.

Finally, the changed environment of global security issues following the fall of communism in the former Soviet Union and Eastern Europe, as well as the often-cited reduced hegemony of the United States in the world economy, are among the systemic factors that have contributed to waning commitment to multilateralism and the GATT process of global trade liberalization.

Regional Trading Arrangements, Developing Countries, and the ASEAN Example

The factors that militated against a positive outcome of the Uruguay Round encouraged a number of industrial and advanced developing countries in recent years to pursue bilateral approaches to expanding their trade relations. Thus, in 1993 Canada, Mexico, and the United States concluded a trilateral agreement to establish the North American Free Trade Agreement (NAFTA), and the countries of the European Community (EC) and European Free Trade Area (EFTA) ratified a plan to create a fully integrated economic union, the new European Union, in Western Europe. Nominally, these economic arrangements do not violate the GATT articles of agreement. Specifically, so long as the arrangements cover "substantially all" trade and do not raise tariffs or other formal barriers to imports from third countries, they are permitted by Article XXIV of the General Agreement because they are viewed, on balance, as positive steps toward efficient economic integration of closely allied territories. Nonetheless, because they exclude producers in third countries

from enjoying equal access to goods markets in the trading bloc, regional trading arrangements are fundamentally discriminatory in nature and hence contradict the most-favored-nation principle underlying the GATT.

The contradiction that increasing bilateralism poses for the global trading system has not escaped the attention of policymakers in other countries, especially Japan and many developing countries. A number of policymakers have expressed their fear that the global trading system will gradually divide into a tripartite system of regional trading blocs dominated by the European Union countries in Europe, the Middle East, and Africa; Japan in Asia; and the United States in the Western Hemisphere (Bhagwati 1991, 1992, 1993). But bilateralism has other modern antecedents. In the 1960s and 1970s, many developing countries themselves pursued regional, and even global, schemes to promote closer trade and other economic relations among themselves on a preferential basis. At the global level, with support from the United Nations and some inspiration from the 1979 Nobel address of Sir Arthur Lewis (1980), a number of low- and middle-income developing countries formulated the so-called global system of trade preferences (UNCTAD 1985). Many developing countries have also been parties to a plethora of regional economic agreements, principally involving preferential trading arrangements; the vast majority of these agreements are found in Africa and Latin America (Table 1).

Regional trading arrangements among developing countries have not been widely marked by significant gains in exports, output, or other measurable economic benefits (Langhammer and Hicmenz 1990; de Melo and Panagariya 1992, 1993). But there remains steadfast commitment to such arrangements among policymakers in many developing countries. Regional trading arrangements are regarded as effective instruments for realizing not only the familiar static gains from trade, but also dynamic gains from trade in connection with increasing exports of manufactures and other nontraditional goods, achieving greater scale economies and technological advancement, and promoting broad objectives of economic development—particularly industrialization (Linnemann 1992).

In recent years, the commitment of policymakers in developing countries to regional trading arrangements has been reinforced by the rise of bilateralism in the trade relations of the United States and the new European Union. But policymakers in developing countries also point with some frequency to the alleged success of the preferential trade and related investment arrangements of the Association of Southeast Asian Nations (ASEAN), whose membership consists of Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand (in July 1995, Vietnam became the seventh member of ASEAN). Broadly speaking, these countries have exhibited robust economic performance during the past 25 years. Thus, the contribution of the ASEAN economic arrangements to the economic record of these countries has important implications for developing countries in other regions. Moreover, among the most prominent examples of the resurgence of regionalism in the developing world is the recently announced plan of the Southeast Asian countries to form the ASEAN Free Trade Area, initially scheduled to commence in 1993 but later slated to begin in 1995. Accordingly, the ASEAN economic arrangements are likely to remain at the forefront of international discussions of the merits of regional trading arrangements among developing countries.

Table 1—Organizations for economic cooperation and trade in developing regions

Region	Organization (Member Countries)
Sub-Saharan Africa	Central African Customs and Economic Union (UDEAC: Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea, Gabon)
	Common Market for Eastern and Southern Africa (COMESA: Angola, Burundi, Comoros, Djibouti, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Somalia, Sudan, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe)
	Economic Community of West African States (ECOWAS: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra-Leone, Togo)
	Southern African Customs Union (SACU: Botswana, Lesotho, Namibia, South Africa, Swaziland)
	Southern African Development Community (SADC: Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe)
Asia	Asia-Pacific Economic Cooperation (APEC: Australia, Brunei, Canada, China, Hong Kong, Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, the Philippines, Singapore, Taiwan, Thailand, United States)
	Association of Southeast Asian Nations (ASEAN: Brunei, Indonesia, Malaysia, the Philippines, Singapore, Thailand)
	South Asian Association for Regional Cooperation (SAARC: Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka)
Latin America	Andean Common Market (ANCOM: Bolivia, Colombia, Ecuador, Peru, Venezuela)
	Caribbean Community (CARICOM: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts-Nevis, St. Lucia, St. Vincent, Trinidad-Tobago)
	Central American Common Market (CACM: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua)
	Latin American Integration Association (LAIA: Argentina, Bolivia, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, Venezuela)
	Southern Cone Common Market (MERCOSUR: Argentina, Brazil, Paraguay, Uruguay)
Middle East and North Africa	Cooperative Council for the Arab States of the Gulf (GCC: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates)
	Council of Arab Economic Unity (CAEU: Egypt, Iraq, Jordan, Kuwait, Libya, Mauritania, Somalia, Sudan, Syria, United Arab Emirates, Yemen)
	Economic Cooperation Organization (ECO: Iran, Pakistan, Turkey)

Sources: Torre and Kelly 1992; Union of International Associations 1987.

The Present Study

This study examines the ASEAN system of cooperative investment and preferential trading arrangements, and the plan for the new ASEAN Free Trade Area, with a view to assessing the general desirability of regional trading arrangements for developing

countries—including lower-income countries whose comparative advantage (like that of several ASEAN countries) lies significantly in agriculture and other natural resource-based commodities and products.

The study is organized in several chapters. First, the basic economics of preferential trading areas are considered, beginning with the Vinerian concepts of trade creation and trade diversion but emphasizing the more modern aspects of international trade theory and welfare economics that point to the importance of relative factor endowments and international comparative advantage for determining the potential economic benefits of regional trading arrangements (Chapter 3). Next, the fundamental factors, including national trade and economic policies, that contribute significantly to the circumstances of the ASEAN countries in the world economy and the dimensions of their international trade relations are reviewed (Chapter 4). The following chapter examines the ASEAN coordinated investment schemes and preferential trading arrangements established in the late 1970s and introduces the main features of the plan for the new ASEAN Free Trade Area (AFTA) (Chapter 5). The study then turns to a quantitative analysis of the expected economic effects of the AFTA plan. The analysis is based on the results of comparative static simulations of a trade-focused, multisector model of the regional and multilateral trade relations of the ASEAN countries that takes into account tariff and nontariff barriers to imports enforced by the ASEAN countries and their principal trading partners (Chapter 6). Finally, the concluding chapter considers the efficacy of regional trading arrangements for the ASEAN countries and developing countries in general (Chapter 7).

REGIONAL TRADING ARRANGEMENTS IN ECONOMIC THEORY

During the last century or more, regional trading arrangements have periodically come to the fore in discussions of international economic policies (Viner 1950). In economic terms, the predominant issue surrounding preferential trading arrangements is whether a subset of countries might increase their gains from international trade through the formation of a free trade area, customs union, or economic union.² Article XXIV of the GATT, which addresses the consistency of regional and other preferential trade arrangements within the GATT system, regards such arrangements favorably. So long as these arrangements remove barriers to intrabloc trade against substantially all traded goods and do not increase formal barriers to trade with third countries on average, they are presumed to improve economic welfare and contribute to the expansion of world trade.³

Although supported by the GATT, this view has not met with the general acceptance of economists. In his seminal analysis, Viner (1950) outlined a number of conditions for the probable success, or failure, of preferential trading arrangements in meeting the goal of increasing national and world economic welfare. His analysis placed particular emphasis on the importance of two concepts: trade creation and trade diversion. The first concept refers to the extent to which preferential trading arrangements provide new opportunities for trade between countries, while the second concept refers to the extent of deflection of existing trade flows from one partner country to another. The extension of trade preferences, in the form of reduced tariff or nontariff barriers, suggests a high degree of substitution among competitive exports from different countries (trade diversion). This need not be the case, however, if the preferences lead to expansion of trade in categories where little or no trade existed before or to a higher total volume of trade (trade creation). In Viner's framework, a preferential trading arrangement is beneficial to the global trading system if trade creation exceeds trade diversion.

Viner emphasized that preferential trading arrangements among competitive economies, which he defined as economies having similar structures (especially with regard to industrial subsectors), were most likely to be trade creating. In particular, he contended that preferential arrangements would allow competitive countries to increase their specialization in producing (and exporting among themselves) goods

²In a free trade area, countries eliminate all barriers to imports originating from within the region. A customs union is a free trade area in which member countries also adopt a common set of external trade policies vis-à-vis third countries. Finally, an economic union involves the adoption of both common external trade policies and the free movement of primary factors of production as well as goods within the union. This section focuses on the mostly similar economic implications of free trade areas and customs unions.

³Legal as well as economic aspects of the obligations of regional trading arrangements and customs unions under the GATT are discussed at length by Dam (1963, 1970) and Finger (1993).

increase their specialization in producing (and exporting among themselves) goods produced previously in highly sheltered markets, following each country's comparative advantage and without diverting substantial trade from third countries.⁴

Although Viner's analysis demonstrated that customs unions and free trade areas need not be welfare improving, his analytical framework has some important shortcomings when measured against modern neoclassical trade theory. For instance, Viner's analysis considers only the case of constant-cost production technologies and does not account for differences between countries in marginal rates of substitution in consumption of exportables and importables (Lipsey 1957, 1960). In neoclassical trade theory, which admits more general assumptions regarding possibilities for substitution in both consumption and production of traded goods, the Vinerian concepts of trade creation and trade diversion lose precise meaning for gauging the merits of preferential trading arrangements.⁵ But this theory offers a more useful conceptual framework, one that enables gains and losses in economic welfare under alternative trading arrangements to be identified more explicitly in terms of the consumption and production possibilities of countries.

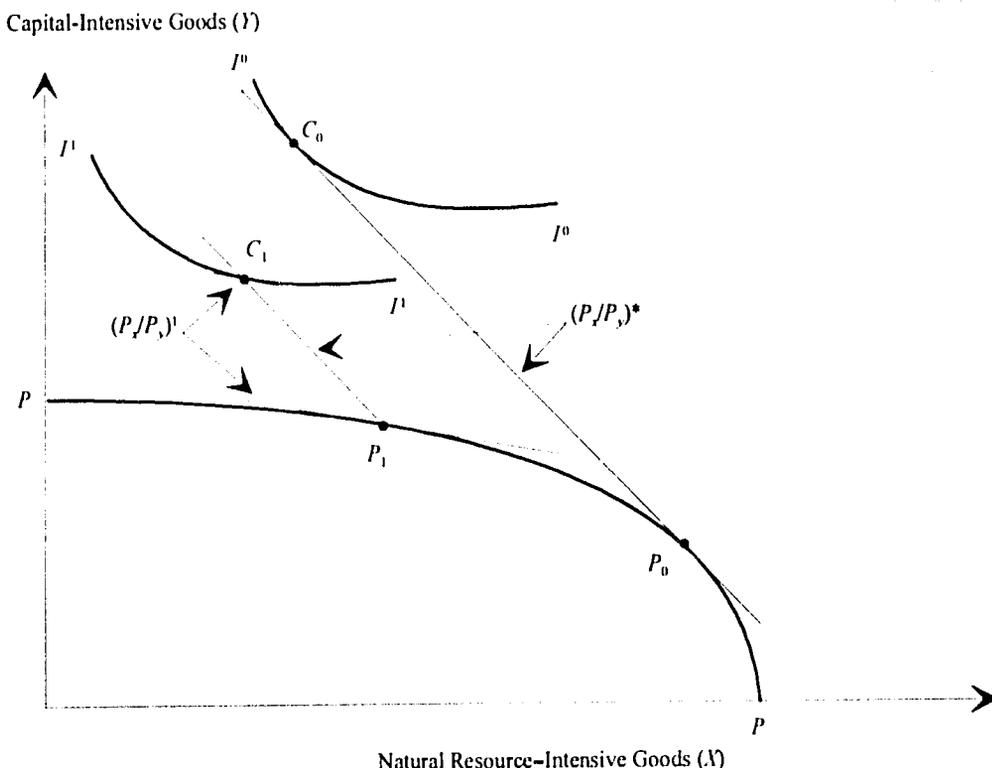
To gain some appreciation of the general implications of preferential trading arrangements, consider the neoclassical framework for an individual trading country summarized in Figure 1. The country's consumption preferences are indicated by community indifference curves (II), and its production possibilities by the production possibilities curve PP . Let goods X and Y be produced by, say, relatively natural resource- and capital-intensive means, respectively. Based on the construction of the PP curve, the country is assumed to be relatively abundant in natural resources. Given international terms of trade $(P_x/P_y)^*$, unrestricted trade would result in production at a point such as P_0 and consumption at a point such as C_0 . To promote greater domestic production of capital-intensive goods, however, the country imposes an ad valorem tariff against imports of good Y , with the result that the domestic terms of trade decline to $(P_x/P_y)^1$ as domestic production and consumption of the two traded goods adjust to the levels indicated by points P_1 and C_1 , respectively. The resulting equilibrium promotes industrialization, but it also represses output (and exports) in the natural resource sector, as emphasized in the recent literature on the bias against agriculture in the trade and macroeconomic policies of many developing countries (Krueger, Schiff, and Valdés 1988, 1992; Bautista and Valdés 1993). The new equilibrium is also Pareto-inferior to the equilibrium possible under free trade because a lower community indifference curve, II^1 , becomes the highest attainable level of community welfare.⁶

⁴This perspective on the competitiveness of economies differs from that more commonly understood in international trade relations, as discussed later in this chapter. Notably, it also closely resembles that underlying the United Nations recommendations to the ASEAN Secretariat in the early 1970s (United Nations 1972) and the subsequent formulation of the first ASEAN regional investment and trade arrangements.

⁵See, in particular, Lipsey 1970 and Collier 1979. Also, see Gunter 1989 for a general discussion and taxonomy of the possible sources of welfare effects resulting from the formation of a customs union.

⁶The new equilibrium is also inferior to the equilibrium that would obtain if the country were to employ a tax-cum-subsidy strategy to motivate production at point P_1 . By allowing the marginal rate of substitution in consumption to equal the international terms of trade, a country could attain a much higher level of community welfare without sacrificing the objective of encouraging production at point P_1 .

Figure 1—Equilibrium under free trade and protection



Although many, especially applied, studies have focused on discerning the net trade creation (or diversion) effects of customs unions using Viner's seminal analysis, the customs union issue requires, ultimately, closer investigation of whether countries forming a preferential trading arrangement achieve higher levels of economic welfare. The analytical framework in Figure 1 provides some interesting insights and a partial answer to this question, using the elements of modern welfare economics that are not transparent in the simple Vinerian framework.⁷

Assume momentarily that the country is willing to forgo achieving fully its objective of fostering production of capital-intensive goods at point P_1 . The country, however, must seek to align itself with other countries whose trading interests are such that the terms of trade formed by the economic alliance will enable the country

⁷More thorough discussion of the neoclassical approach to analyzing preferential trading arrangements is provided in Bhagwati and Srinivasan 1983 and Bhagwati 1991, 1992. The analysis here focuses solely on the implications of economic integration for two highly protected countries forming a trading pact. The implications for the global trading system are not explicitly considered. Notably, Kemp and Wan (1976) demonstrate that any group of protection-ridden countries might form a customs union and adjust the external tariff structure sufficiently to improve the economic welfare of the union members while leaving the economic welfare of third countries unchanged. Bhagwati (1992), however, emphasizes that the history of regional trading arrangements offers no examples of the operational relevance of the Kemp-Wan findings.

to at least maintain its level of community welfare at P_1 . As depicted in Figure 2, this requirement implies that the terms of trade of the allied countries must exceed $(P_x/P_y)^2$. These critical terms of trade are clearly less advantageous than the international terms of trade available to the country. But they are discernibly greater than the terms of trade that prevailed previously in the tariff-protected market, $(P_x/P_y)^1$.

Figure 2 points to the fundamental importance of the relative factor endowments and hence comparative advantage of the countries forming an economic alliance. Should a given country ally itself with one or more other countries that have similar relative endowments of primary resources ("competitive economies" in the parlance of modern international trade relations), the resulting terms of trade among the allied countries would be unlikely to exceed $(P_x/P_y)^2$. Only in the case of an alliance involving complementary factor endowments among countries would the preferential trading arrangement be expected to yield a substantial improvement in economic welfare for the country in question. Ironically, this important insight is also applicable to the case of unrestricted trade, which would offer the country the most advantageous terms of trade for its output, namely, the international terms of trade $(P_x/P_y)^*$ (Figure 1).⁸

Based on the early arguments of Viner, economists and other policy analysts sometimes contend that, although regional groupings of developing countries may fall short of a desirable level of resource complementarity, regional trading arrangements still provide a valuable degree of "collective" import substitution that promotes competition among sheltered industries between countries and, in the long run, will imbue the industries with near-complete international competitiveness. Also in this vein, some policy analysts argue that regional trading arrangements provide the opportunity for industries to realize greater economies of scale as the result of the creation of larger regional markets.

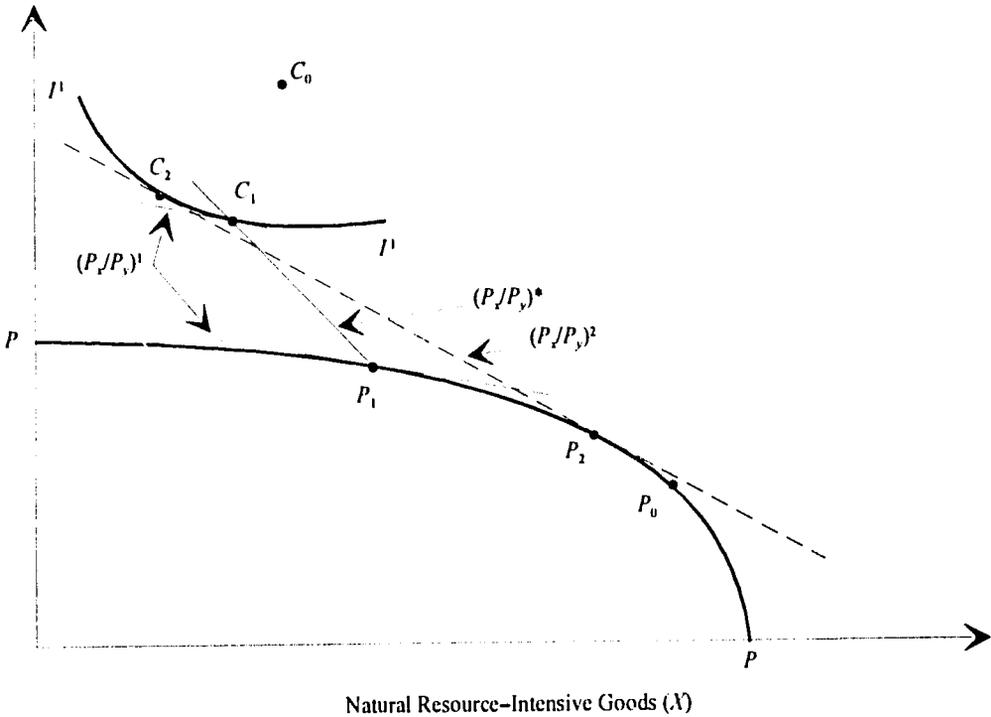
Both arguments are disingenuous to the extent such competitive and production scale advantages might be achieved to an even greater degree through greater integration in the global trading system. Nevertheless, the first argument merits greater attention here because it touches on the important issue of whether, and how, regional trading arrangements can be regarded as consistent with ultimately promoting greater trade in the world economy on a multilateral basis.

The analytical framework considered in Figures 1 and 2 is not sufficiently disaggregated to trace competitive adjustment of more than one protected industry after the establishment of a preferential trading arrangement. If, however, increased specialization and competitiveness of a country's industries were to occur when the country joined a preferential trading area, prices of industrial output relative to, say, agricultural or other natural resource-intensive goods would tend to fall. In other

⁸Figure 2 does not provide satisfactory answers to some questions posed by the issue of customs unions in the case of preferential trading arrangements among developing countries that are intent upon achieving similar development and especially industrialization goals. As emphasized by Cooper and Massell (1965) and Johnson (1965), these countries often have noneconomic objectives in establishing regional or other special trading arrangements. Thus, maintenance of production at a point such as P_1 in Figure 2, through production tax-cum-subsidy schemes favoring the industrial sector, becomes an important constraint on the successful formation of a customs union among such countries. In particular, it imposes an even greater burden upon a country to join a trading alliance whose members have sufficient diversity of relative factor endowments, and hence intrabloc terms of trade sufficiently greater than $(P_x/P_y)^2$, that the given country's economic welfare will be improved.

Figure 2—Equilibrium under a preferential trading arrangement

Capital-Intensive Goods (Y)



words, they would tend to adjust in the direction of the international terms of trade. If this development were allowed to guide the allocation of resources in the economy, then competitive industrial production in the country would begin to cause aggregate industrial production to fall. To be sure, output and prices in the industrial subsector in which the country is revealed to have a comparative advantage would be expected to rise in response to increased foreign demand from within the preferential trading area. But at the same time, output and prices would be expected to fall in the industrial subsectors dominated by other countries in the trading bloc. Thus, industrial competition would tend to induce a decline in the aggregate relative price of industrial goods in the economy, and at the margin resources would flow to the resource-intensive sectors. In the long run, the outcome would be similar to the adjustment of production from P_1 to P_2 depicted in Figure 2.

This outcome, however, would not occur so long as the country maintained its commitment to achieving a minimum level of industrial production (P_1 in Figures 1 and 2). A combination of forces might seek to maintain this level. Most important, because of its commitment to promoting industrialization, the government might subvert competitive adjustment from P_1 to P_2 , through continued production tax and subsidy schemes. Also, vested economic interests, especially those in industries that were previously sheltered from foreign competition, might wield sufficient political power to influence the government to maintain special production taxes and subsidies or even to undermine the preferential trading arrangement more directly by

imposing nontariff barriers or other new trade restrictions on the country's partners in the preferential trading system.

In sum, it is far from clear that preferential trading arrangements, especially among countries that have similar resource endowments, provide a ready avenue for substantially increasing economic welfare or promoting shared industrialization or other development goals. More fundamentally, the analysis here indicates that, to improve their economic welfare, developing or other "small" countries should pursue greater economic integration with the world economy rather than join regional or other trading blocs whose member countries have similar relative endowments of natural and other primary resources. The most efficient path toward expansion of industrial or other targeted sectors is likely to be a gradual accumulation of capital, human resources, or other primary resources sufficient to influence the relative abundance of resources in these countries and hence their fundamental international comparative advantage. Indeed, this path has been the experience of trading countries throughout history, and arguably of Japan and the newly industrialized countries of East Asia that have pursued relatively open economic policies toward their regional as well as more distant trading partners (see, for example, Hughes 1991).

Finally, some analysts have suggested that regional trading arrangements might provide useful building blocks for global trade liberalization because ultimately they would encourage countries to move toward multilateral free trade (see, for example, North-South Institute 1991). The basis for this view is not entirely clear. A particular danger is that, even if regional trading blocs are trade creating on balance, they would promote the creation of new vested interests in the maintenance of the preferential trading arrangements, making future moves toward global trade liberalization more difficult than before (Krueger 1995). On the other hand, particularly in cases where regional or other preferential trading arrangements lead to little or no improvement in economic welfare, such arrangements might serve in a backhanded way to reemphasize the greater economic gains to be enjoyed from liberalizing trade on a nondiscriminatory basis. Also, despite the difficulties posed by creation of vested interests in preferential trading areas, the emergence of competition between multilateralism under the GATT and regionalism might result in more effective progress in lowering barriers to international trade worldwide, in the end achieving the objectives of multilateralism and reducing the bias against agriculture in developing countries.

THE ASEAN ECONOMIES IN THE GLOBAL TRADING SYSTEM

The ASEAN Economies

With the exception of Brunei and Singapore, the ASEAN countries are mainly middle-income developing countries. In broad terms, they possess a number of economic similarities attributable to their location in the same geographical area as well as to shared aspects of their cultures, history, and economic and social development. With regard to their economic performance, the ASEAN countries have distinguished themselves from developing countries in most other regions by achieving relatively high rates of economic growth and domestic saving, accompanied by relatively low rates of inflation (Table 2). This record has lent a considerable degree of economic stability to the countries. It has also attracted large amounts of direct foreign investment by multilateral enterprises interested in using the appreciable stocks of natural and accumulated resources of the ASEAN countries, including especially their human resources. Indeed, the economic record of the ASEAN countries over the past two decades is exceeded only by that of the newly industrialized countries (NICs) of East Asia, which include Singapore as well as Hong Kong, the Republic of Korea, and Taiwan.

While the economies of the ASEAN countries are similar in many ways, specific aspects of their economic development and performance show important differences. The most advanced economy in the group is the city-state of Singapore. With a per capita income level in 1989 of more than US\$10,000, Singapore is a modern high-income country that boasts a highly trained workforce by international as well as regional standards. At the other end of the economic spectrum are Indonesia and the Philippines. Marked by low per capita income levels, US\$500 and US\$710 respectively, these two countries have generally exhibited substantially weaker economic performance than the other ASEAN countries; in particular, they have experienced higher inflation, weaker export growth, and, especially in the case of the Philippines, lower rates of investment relative to GDP. Finally, in the middle range of the spectrum are Malaysia and Thailand. With per capita incomes of US\$2,160 and US\$1,220 respectively, the economic performance of these two countries has been exceptional by most measures, and both countries are frequently mentioned as the next, or newly emerging, Asian NICs.⁹

⁹The Sultanate of Brunei joined ASEAN in 1984. The country is very small in area (about 6,000 square kilometers) and in population (about 250,000 persons), but it possesses considerable reserves of crude petroleum and natural gas. As a consequence, its per capita income is in the high-income range, about US\$15,000. Unfortunately, records of the economic performance of Brunei are insufficient in most regards. Accordingly, Brunei is treated only briefly in much of the discussion about the ASEAN countries presented in the text, as is Vietnam, which joined ASEAN in mid-1995.

Table 2—Macroeconomic indicators for ASEAN and other countries, 1980–89

Region/Country	Per Capita Income (1989) (US\$)	Average Annual Change ^a					Share of GDP	
		Inflation	Gross Domestic Product	Gross Domestic Investment	Exports	Imports	Gross Domestic Investment	Gross Domestic Saving
					(percent)			
ASEAN countries	852	6	5	4	8	5	33	36
Indonesia	500	8	5	7	2	0	35	37
Malaysia	2,160	2	5	1	10	4	30	34
Philippines	710	15	1	-8	1	0	19	18
Singapore	10,450	2	6	3	8	6	35	43
Thailand	1,220	3	7	6	13	8	31	29
Developing countries	800	54	4	2	5	1	26	27
Sub-Saharan Africa	340	19	2	-4	-1	-6	15	13
Asia	447	7	n.a.	n.a.	n.a.	n.a.	30	29
East Asia ^b	540	6	8	10	10	8	34	35
South Asia	320	8	5	4	6	4	22	18
Europe, Middle East, North Africa	2,180	22	3	0	6	2	29	28
Latin America	1,950	161	2	-2	4	-4	20	24
Low-income	330	9	6	8	5	3	28	26
Middle-income	2,040	73	-3	0	6	1	25	27
Industrial countries	18,330	5	3	4	4	5	22	22

Source: World Bank 1991.

Note: n.a. indicates not available.

^aGrowth rates of gross domestic product, gross domestic investment, exports, and imports are in real terms.

^bIncludes China.

Although the pursuit of prudent macroeconomic policies is a major element in the robust economic performance of the ASEAN countries, it is instructive to consider the underlying endowments of primary factors of production and the contribution that these factors make to the structure of the ASEAN economies. The contribution of trade and other institutional and regulatory policies to the economic performance of these countries is also important, but more specific consideration of these policies is left to the following section, which examines the international trade relations of the ASEAN countries.

Like most Asian countries, the ASEAN countries are very populous. That is, their abundance of human resources relative to land, capital, and other productive resources is large compared with that found in other developing and industrial countries (Table 3). For instance, the average density of population in the ASEAN countries (excluding Singapore) is more than 100 persons per square kilometer compared with only about 21 persons per square kilometer in both Sub-Saharan Africa and Latin America, and about 25 persons in Europe, the United States, and other industrial countries. The development of human resources is also relatively high, as indicated by national levels of education. The average level of educational attainment in the ASEAN countries is more than twice that found in the low-income countries of Africa, and in several individual countries (the Philippines, Singapore, and Thailand) the level of educational attainment compares favorably with that found in the middle-income developing countries of Europe and Latin America. Finally, if the stock of productive capital, both human and physical, is proxied by the level of per capita income, the ASEAN countries lag behind other middle-income countries, but still enjoy a substantially greater abundance of capital than most low-income developing countries.¹⁰

The ASEAN countries are also abundantly endowed, in relative terms, with natural resources. Given its location and climatic conditions, Southeast Asia supports the cultivation of a number of tropical crops and agricultural products, including rice, cassava, vegetable oils, sugar, spices, tropical hardwoods, and rubber (see, for example, DeRosa 1991). It is also endowed with appreciable reserves of mineral fuels and ores. Indonesia and Malaysia possess substantial reserves of crude petroleum, while Indonesia, Malaysia, the Philippines, and Thailand have significant deposits of gold, tin, silver, and copper. Finally, given their proximity to the South China Sea and the Indian and Pacific Oceans, the ASEAN countries have traditionally counted as part of their natural resource base ready access to the extensive coastal and deep-sea fisheries.

The structure of the ASEAN economies is shaped perceptibly by these resource endowments. With the greatest concentration of physical and human capital in Southeast Asia, the economy of Singapore is largely devoted to financial and business services, skilled labor-intensive manufacturing, petroleum refining, and shipbuilding and ship repair. The remaining four major ASEAN countries share economic structures shaped by similar relative endowments of natural resources as well as labor. All four countries have large agriculture sectors devoted to the production of foods and agricultural raw materials. At the same time, they have expanding manufacturing sectors that make labor-intensive products: apparel, electronic components and products, and other light manufactures for domestic and overseas markets. Other important industrial subsectors include mineral extraction and processing (such as crude petroleum production

¹⁰On the use of per capita income as a proxy for the relative abundance of physical and human capital in Asian countries, see Riedel 1991.

Table 3—Indicators of fundamental economic factors for ASEAN and other countries, 1989

Region/Country	Population	Population Density	Education	Per Capita Income	Structure of Production					Merchandise Trade	
					Agriculture	Industry			Services	Export	Imports
						All Industry	Manufacturing	Other			
(millions of people)	(people/square kilometer)	(index) ^a	(US\$)	(percent of GDP)							
ASEAN countries	313	102	88	852	18	37	21	16	45	44	44
Indonesia	178	93	63	500	23	37	17	20	39	24	18
Malaysia	17	52	92	2,160	20	39	26	13	41	68	61
Philippines	60	200	140	710	24	33	22	11	43	18	25
Singapore	3	3,000	169	10,450	0	37	26	11	63	142	158
Thailand	55	107	108	1,220	15	38	21	17	47	30	38
Developing countries	4,053	53	63	600	19	38	n.a.	n.a.	44	16	16
Sub-Saharan Africa	480	21	28	340	32	27	11	16	38	19	19
Asia											
East Asia ^b	1,552	100	71	540	24	44	33	11	34	23	24
South Asia	1,131	219	62	320	32	26	17	9	41	6	9
Europe, Middle East,											
North Africa	433	37	130	2,180	n.a.	n.a.	n.a.	n.a.	n.a.	15	17
Latin America	421	21	133	1,950	n.a.	n.a.	n.a.	n.a.	n.a.	14	10
Low-income	2,948	80	52	330	32	27	17	10	31	12	14
Middle-income	1,105	27	142	2,040	12	36	n.a.	n.a.	50	18	18
Industrial countries	830	25	293	18,330	2 ^c	34 ^c	23 ^c	11 ^c	64 ^c	16	17

Sources: Harbison and Myers 1964; World Bank 1991; and UNCTAD 1991.

Note: n.a. indicates not available.

^aHarbison-Myers index of human resource development calculated as the secondary enrollment rate plus five times the university enrollment rate, both calculated in their respective age cohorts.

^bIncludes China.

^c1988.

in Indonesia and Malaysia and metal ore works in Malaysia, the Philippines, and Thailand). Although they have achieved a high degree of industrialization, the ASEAN countries (except Singapore) are still relatively agrarian and have yet to attain a level of industrialization matching that found in the East Asian NICs. Finally, the service sectors of the four countries account for about 40 percent of domestic output.

The most remarkable feature of the ASEAN economies is the extent of their integration with the world economy. Like the East Asian NICs, most ASEAN countries depend heavily on trade with other countries to provide markets for their products as well as sources of necessary intermediate and final goods. As a traditional entrepôt center in Southeast Asia, Singapore has an export and import trade nearly one-and-a-half times larger than its gross domestic product. In the other ASEAN countries, openness to trade is substantially smaller, but still greater than in most other developing countries. In Malaysia trade amounts to between 60 and 70 percent of domestic output, and in Thailand it amounts to between 30 and 40 percent. Only in Indonesia and the Philippines, where levels of protection have been among the highest in the ASEAN countries, is measured integration with the world economy similar to that typically observed in other developing countries, between 15 and 25 percent. According to many economists, the relative openness of the ASEAN countries, especially Malaysia, Singapore, and Thailand, is a vital determinant of the superior trade and general economic performance of the ASEAN countries. By allowing greater competition in domestic markets, these countries, economists believe, enjoy important dynamic as well as static gains from trade. More specifically, these countries are believed to achieve higher rates of economic efficiency because foreign competition imposes greater pressure on local producers to adopt more productive, and internationally competitive, technologies. Also, the availability of a wider array of competitively priced consumer goods in local markets is believed to provide consumers in these countries with a higher standard of living, as well as with incentives for contributing greater effort to production in all sectors, including agriculture.

International Trade Relations

Trade Policies

The trade relations of most countries are shaped by two important, but sometimes opposing, sets of factors. The first set consists of so-called fundamental factors that in economic theory determine the underlying comparative advantage of countries. These factors typically include endowments of labor and natural resources, including arable land. They also include accumulated stocks of human and physical capital that are sometimes less tangible and depend heavily on community and individual saving behavior. Accumulated stocks of productive social and private capital are one important element, but another is human resource development through education and other means of acquiring technical skills.¹¹

Of primary interest here is the second set of factors, namely, the statutory, administered, and other trade policies that lawmakers and policymakers in advanced

¹¹Edward Leamer (1984) provides a rigorous theoretical and econometric analysis of the importance of fundamental factors in international trade. Also, see Deardorff 1984 and, more recently, Leamer 1993 for insightful reviews of the strengths as well as limitations of the large body of empirical studies of the determinants of international trade.

as well as developing countries use to promote and, more often, to inhibit trade, in order to achieve political economy objectives such as the protection of selected domestic industries or the redistribution of income between domestic economic groups. In the extreme, trade may be completely prohibited. In most instances, however, policy measures that affect trade at the margin are applied to either exports or imports to achieve the objectives desired. Because trade flows present a ready "handle" for tax collection, the ASEAN countries, like many countries, first employed tariffs solely for revenue purposes (Findlay and Garnaut 1986). But the use of trade taxes has evolved beyond the need for fiscal revenues in most ASEAN countries; now such taxes are used predominantly for restrictive purposes, often in conjunction with nontariff barriers. Although several of the ASEAN countries, particularly Malaysia and Thailand, impose tariffs and other restrictions on some exports (chiefly, selected agricultural and natural resource-based goods), the ASEAN countries employ trade measures more extensively to protect domestic producers of consumer and industrial goods from import competition.¹²

Table 4 summarizes the salient features of protection in the ASEAN countries. The overview is based on information from the UNCTAD Trade Control Measures Information System, an inventory of import control measures in developing countries compiled from official sources and established to support negotiations to expand South-South trade (Tymowski 1987; UNCTAD 1985, 1987, 1988, 1989). Only tariffs, "paratariffs" (other fiscal charges applied to imports), quantitative restrictions, and other prominent forms of nontariff barriers are considered. While tariffs and paratariffs are presented in familiar ad valorem terms, nontariff barriers are examined in terms of frequency ratios, which measure in percentage terms the number of national tariff schedule lines within an aggregate trade category affected by a given import regulation.

The table presents average (unweighted) levels of nominal protection for the categories of primary commodities, manufactures, and all goods in the ASEAN countries during the mid- to late 1980s. In addition, it gives data for major subdivisions of primary commodities and manufactures that have protection at higher than average rates.¹³ Nominal levels of protection are emphasized here; "effective" measures of protection, which indicate the extent to which value-added, rather than gross output, of agricultural and industrial subsectors is protected by tariff and other import restrictions, are difficult to estimate with precision and can be subject to conceptual problems.¹⁴ Moreover, bilateral, regional, and multilateral negotiations to reduce trade barriers typically focus on nominal levels of protection.

Protection levels differ perceptibly across the ASEAN countries. Singapore appears to be virtually without tariff and paratariff controls on imports; it applies an average import tariff rate of only 0.3 percent. Malaysia too appears to be very open; it enforces an average tariff rate of about 14 percent. The remaining ASEAN countries apply ad valorem tariffs at substantially higher average rates, between 18

¹²On the use of export control measures in the ASEAN countries, see, for instance, IMF 1992b.

¹³The complete details of nominal protection levels in the ASEAN countries by subdivisions of primary commodities and manufactures are provided in Appendix 1.

¹⁴See, for example, Bhagwati and Srinivasan 1973. Although levels of nominal and effective rates of protection may differ substantially from one another, empirical studies indicate that the two rates of protection are generally highly correlated with one another.

Table 4—Import restrictions in ASEAN countries, 1987

Country/Good	Tariffs and Paratariffs		Frequency of Nontariff Barriers ^a				
			All Nontariff Barriers	Quantitative Restrictions			
	Mean Tariff	Total Charges ^b		Licenses	Quotas	Prohibitions	Other ^c
			(percent)				
Indonesia							
Primary commodities	14.7	14.7	98.9	61.7	13.8	21.8	1.6
Cereals	3.6	3.6	100.0	0.0	0.0	56.4	43.6
Fuels	4.7	4.7	100.0	100.0	0.0	0.0	0.0
Manufactures	19.4	19.6	93.1	87.0	1.5	0.5	4.1
Metal manufactures	8.2	8.2	99.3	58.4	0.0	0.0	40.9
Nonelectrical machinery	12.6	13.1	96.6	87.2	0.0	0.0	9.4
All goods	18.1	18.2	94.7	80.1	4.9	6.4	3.3
Malaysia							
Primary commodities	8.6	8.7	4.5	4.3	0.0	0.2	0.0
Cereals	2.0	2.0	30.8	30.8	0.0	0.0	0.0
Manufactures	15.4	16.2	3.2	3.2	0.0	0.1	0.0
Metal manufactures	6.1	6.1	8.3	8.3	0.0	0.0	0.0
Transportation equipment	15.2	15.4	10.7	10.7	0.0	0.0	0.0
All goods	13.6	14.3	3.7	3.6	0.0	0.1	0.0
Philippines							
Primary commodities	26.9	31.9	40.5	32.9	3.6	1.7	2.3
Cereals	36.9	41.9	100.0	57.7	38.5	0.0	3.8
Fuels	16.0	21.0	75.0	75.0	0.0	0.0	0.0
Manufactures	28.5	33.5	46.5	42.7	0.6	0.4	2.6
Nonelectrical machinery	20.5	25.5	88.2	88.1	0.0	0.0	0.1
Electrical machinery	32.4	37.4	98.1	95.5	0.6	0.0	2.0
All goods	28.1	33.1	44.9	40.2	1.5	0.7	2.5
Singapore							
Primary commodities	0.1	0.1	15.3	15.3	0.0	0.0	0.0
Cereals	0.0	0.0	30.8	30.8	0.0	0.0	0.0
Agricultural raw materials	0.0	0.0	19.4	19.4	0.0	0.0	0.0
Manufactures	0.4	0.4	14.1	13.8	0.0	0.4	0.0
Chemicals	0.0	0.0	49.0	48.6	0.0	0.4	0.0
Electrical machinery	0.0	0.0	11.8	9.5	0.0	2.5	0.0
All goods	0.3	0.3	14.7	14.4	0.0	0.3	0.0
Thailand							
Primary commodities	28.0	38.0	24.4	21.0	0.0	8.2	0.0
Cereals	5.0	15.0	61.5	30.8	0.0	30.8	0.0
Manufactures	32.5	42.5	7.8	5.9	0.0	1.8	0.0
Electrical machinery	33.3	43.3	15.6	13.8	0.0	1.9	0.0
Transportation equipment	22.8	32.8	14.0	8.1	0.0	5.8	0.0
All goods	31.2	41.2	12.4	10.2	0.0	3.6	0.0

Sources: UNCTAD 1987, 1989.

Note: Statistics by country are simple averages of rates of protection across goods categories.

^aPercentage of national tariff schedule lines affected by nontariff barriers within the traded good category.

^bCustoms duties plus customs surcharges and surtaxes, stamp taxes, certain other fiscal charges, and tax on foreign exchange transactions.

^cForeign exchange restrictions, decreed customs value, or state trading monopolies.

percent (Indonesia) and 31 percent (Thailand). The data indicate only weakly that manufactures tend to face higher import duties than primary commodities. More detailed data, however, reveal that "tariff escalation," that is, increasing the degree of protection with the level of processing of a commodity or good, is a significant feature of the structure of tariff protection in the ASEAN countries, just as it is in most industrial and other developing countries.¹⁵

Tariff protection, of course, is often less restrictive in practice because exemptions from statutory tariffs are sometimes, if not often, granted to favored industries and individual economic agents. In some cases, exports from the ASEAN countries are granted rebates for duties paid on imported inputs. In other cases, industrial and other investment projects favored by national development plans, special economic initiatives, or the rent-seeking activities of the project developers may be exempt from import duties. And finally, the ASEAN countries extend preferential tariff rates for selected imports of goods originating in other ASEAN countries under the terms of the ASEAN preferential trading system.

Paratariffs, which discriminate against foreign goods in violation of GATT strictures against the use of internal taxes for such purposes, arise in a variety of ways but are modest or nonexistent in most ASEAN countries. Among the ASEAN countries, the most pronounced use of such measures is by Thailand, which imposes a 10 percent surtax on imported goods sold in domestic markets.

Tariffs and paratariffs on imports are readily measured, and, given their direct effects on import prices, the economic implications of these measures are mostly straightforward. Nontariff barriers, on the other hand, are more difficult to quantify and tend to affect prices more indirectly. They are also particularly trade distorting and costly in economic terms because, unlike tariffs, they limit the extent to which the price system allocates resources for production and consumption in the economy. Finally, nontariff barriers are often associated with highly discretionary administrative systems that encourage rent-seeking activities and thus frequently result in added economic costs to a country.¹⁶

The information about nontariff barriers presented in Table 4 provides a sharper image of the structure of protection in the ASEAN countries, including Singapore. Indeed, although Singapore is widely reputed to be an "open" economy, the information reveals the existence of significant quantitative restrictions, mainly in the form of licensing requirements on imports of cereals, agricultural raw materials, and chemicals. For Indonesia and the Philippines, the data reinforce the view provided by the information on tariffs; both countries apply nontariff barriers to primary commodities and manufactures extensively and at high average frequency ratios.¹⁷ Finally, Malaysia and, to a lesser extent, Thailand appear to exercise restraint in the

¹⁵See Appendix 1. Also, see Laird and Yeats 1987 and Yeats 1987.

¹⁶On the economics of rent seeking and so-called directly unproductive profit-seeking activities, see Tullock 1967, 1980; Krueger 1974; and Bhagwati 1982.

¹⁷It is important to note that in the late 1980s Indonesia began the adoption of major economic reforms that featured the tariffication of many of the nontariff barriers identified in the UNCTAD trade control measures data for 1987, relied upon here. Thus, the UNCTAD data for Indonesia, as well as the other ASEAN countries, may overstate the protection levels and relative importance of nontariff barriers in these countries today. On recent reforms to trade policies in Indonesia, see, for instance, Devarajan and Lewis 1991 and GATT 1991.

application of nontariff barriers, with the important exception of the appreciable nontariff restrictions applied to imports of cereals by both countries.

Although the nontariff barriers enforced by the ASEAN countries are predominantly quantitative restrictions (licensing arrangements, quotas, and prohibitions), state trading is still a feature of the trade regimes of Indonesia and the Philippines. Whereas the Philippines restricts imports of certain agricultural goods and products (mainly maize, sugar, and beverages) to official agencies, over 40 percent of Indonesia's imports of cereals and metal products are channeled through parastatal enterprises and official agencies.

Through nontariff barriers, the ASEAN countries clearly protect their local producers of cereals to a high degree. The commonly given explanation for this is the necessity of achieving domestic food security. In the case of Singapore, however, the protection may reflect mainly the effective political power of the country's small, highly concentrated agriculture sector, composed principally of paddy farmers, swine and poultry producers, and millers of rice and other cereals.

Among the other categories of primary commodities, imports of fuel are also restricted by nontariff barriers at high frequency ratios, but only in Indonesia and the Philippines. The explanation for high nontariff barriers to fuel imports in these two countries is not certain. In the case of the Philippines, it may be related to the country's high fuel import bill and efforts by the government to curb total expenditures on imports through direct controls rather than reform of the domestic administered price systems for energy products and selected other basic commodities. In the case of Indonesia, which is a petroleum-exporting country, the explanation may be related to efforts by the government to promote the development of domestic refining and petroleum product facilities.

Finally, four major categories of manufactures appear to be heavily protected by quantitative controls: metal manufactures (Indonesia and Malaysia), electrical machinery (the Philippines, Singapore, and Thailand), transportation equipment (Malaysia and Thailand), and chemicals (Singapore). These findings are broadly consistent with the industrial development strategies of the individual ASEAN countries. For instance, policymakers in both Malaysia and Thailand have long favored the development of domestic auto production and parts industries. And in recent years, the Government of Singapore has been anxious to encourage the "graduation" of the country's industries to higher skilled-labor-intensive activities. By contrast, protection of the electric machinery subsectors in the Philippines, Singapore, and Thailand seems somewhat anomalous given the relative abundance in the three countries of unskilled labor sufficient to support competitive assembly of components for electronic and other electric machinery products by labor-intensive means.¹⁸

Composition of Trade

The commodity composition of ASEAN trade with the world strongly reflects the structure of the ASEAN economies and, more fundamentally, the relative abundance of human and natural resources in the ASEAN countries (Table 5).

¹⁸A possible explanation for this puzzling result may be that organized labor in the "modern sector" of these countries enjoys a wage rate higher than its social opportunity cost, which encourages the adoption of more capital-intensive technologies than otherwise and reduces competitiveness except behind high walls of protection. See, for instance, Papanek 1985.

Table 5—Commodity composition of trade by ASEAN countries, 1988

	Exports					Imports				
	IN	MA	PH	SI	TH	IN	MA	PH	SI	TH
	(percent)									
Primary commodities	70.4	57.1	38.4	26.1	45.3	24.2	22.0	30.2	27.5	22.9
Foods (0 + 1 + 22 + 4)	13.6	15.6	22.1	6.1	34.7	7.7	10.8	10.5	7.4	5.8
Cereals (041 through 045)	0.1	0.2	0.1	0.3	10.0	2.0	2.8	3.2	0.6	0.4
Agricultural raw materials (2 less 22 + 27 + 28)	10.3	20.5	4.1	4.5	8.0	5.4	1.7	3.0	2.9	4.4
Fuels (3)	40.2	18.2	2.2	12.8	0.8	7.2	5.4	13.2	14.1	7.7
Ores and metals (27 + 28 + 67 + 68)	6.3	2.8	10.0	2.7	1.8	3.9	4.1	3.5	3.1	5.0
Manufactures	28.0	42.6	32.5	69.8	54.1	75.2	77.7	48.8	71.3	73.0
Chemicals (5)	1.8	1.7	3.7	6.6	1.6	19.7	11.2	13.0	6.6	12.6
Metal manufactures (69)	4.4	3.5	5.5	4.1	2.6	10.6	9.5	8.5	7.6	12.6
Other manufactures (6 + 8 less 67 + 68)	21.1	9.2	13.6	11.1	34.5	6.2	11.7	7.4	14.9	8.8
Textiles and apparel (26 + 65 + 84)	7.8	5.5	7.9	5.0	17.1	5.2	4.8	5.8	4.8	5.1
Machinery and equipment (7)	0.7	28.2	9.7	48.0	15.4	38.7	45.3	19.9	42.2	39.0
Nonelectrical machinery (71)	0.1	2.8	0.5	19.9	5.2	23.2	13.9	8.2	14.7	18.0
Electrical machinery (72)	0.3	23.5	8.9	23.8	9.2	7.6	26.2	7.4	22.6	11.5
Transport equipment (73)	0.2	0.9	0.3	2.7	1.0	7.9	5.2	4.3	4.9	9.5
Transactions not classified (9)	1.7	0.3	29.3	4.2	0.7	0.6	0.3	20.9	1.3	4.1
	(US\$ million)									
Total value	19,219	21,153	6,994	39,305	15,903	13,249	16,232	8,729	43,765	20,225

Source: UNCTAD 1991.

Note: ASEAN countries are Indonesia (IN), Malaysia (MA), the Philippines (PH), Singapore (SI), and Thailand (TH). Numbers in parentheses refer to divisions of the standard international trade classification (SITC).

The imports of the ASEAN countries are remarkably similar in composition, as measured by broad aggregates. Primary commodities make up about 25 percent of the total value of imports. Foods are the most important category of commodity imports, but in the Philippines and Singapore fuels also figure prominently. In the Philippines, energy demand is not matched by sufficient domestic supply, especially of crude petroleum, at administered price levels. In Singapore, high imports of oil reflect the country's considerable refining capacity and, more generally, its high demand for energy products stemming from the country's prosperity as well as productivity.

ASEAN imports of manufactures are predominantly capital-intensive intermediate and durable goods, consisting chiefly of chemicals and machinery. Imports of manufactured consumer goods, especially textiles and apparel, appear as "other manufactures." Notably, a higher proportion of Singapore's imports is composed of consumer goods because of the relative affluence of this country, coupled with its more liberal trade regime. Indonesia's comparatively high proportion of chemical imports reflects the relatively large size of the country's agriculture sector and still limited domestic capacity for producing fertilizer and industrial chemicals. Similarly, its imports of nonelectrical machinery reflect the still limited industrial capacity and strong demand for agricultural as well as industrial machinery. In other ASEAN countries, the high proportion of electrical machinery imports results from the labor-intensive production and assembly of electronics products, principally by multinational corporations.¹⁹

The structure of ASEAN exports is more discernibly related to the factor endowments and structure of the ASEAN economies. The significant hydrocarbon deposits in Indonesia are mirrored in its extensive exports of crude petroleum and natural gas. In Indonesia and Malaysia, large tropical forests are the principal factor underlying the substantial exports of agricultural raw materials. And in Indonesia, Malaysia, the Philippines, and Thailand, tropical weather conditions, rich agrarian lands, and plentiful fisheries support appreciable exports of foods and other important agricultural commodities: rice and fish (Thailand), tropical fruits and vegetables (the Philippines and Thailand), vegetable oils (Malaysia), and natural rubber (Indonesia).

In value terms, manufactured exports account for 40 percent or more of the total exports of the ASEAN countries (except Indonesia and the Philippines). The importance of textiles and apparel, electronics products, and other labor-intensive manufactures reflects the relative abundance of human resources in the ASEAN countries. In this regard, only the structure of exports from Singapore appears different from that of the other ASEAN countries. Specifically, Singapore's highly skilled labor force is in large measure responsible for the country's more extensive exports of capital-intensive goods, such as chemicals and nonelectrical machinery.

Directions of Trade

ASEAN exports and imports have their destinations and origins predominantly in trade with non-ASEAN countries, except in the case of Singapore—the center of entrepôt activities in Southeast Asia (Table 6). In 1988, trade with the major industrial countries accounted for 60 percent of all ASEAN exports and 55 percent of all

¹⁹In the case of the Philippines, international trade by multinational enterprises is not classified by product. Thus, Philippine imports (and exports) not classified by transaction in Table 5 are associated principally with trade in electrical machinery.

Table 6—Directions of ASEAN trade with developing and industrial countries, 1988

Exporting Country	Importing Country											
	ASEAN ^a						Developing Countries ^b			Industrial Countries ^c		
	IN	MA	PH	SI	TH	AS	EA	OA	OD	JA	US	EU
	(value in US\$ million)											
Indonesia	0	284	161	1,656	174	623	2,008	879	1,604	9,606	3,484	2,590
Malaysia	300	0	247	6,431	426	7,465	3,065	1,625	2,725	4,741	3,848	3,791
Philippines	36	135	0	263	190	625	715	206	331	2,048	2,897	1,624
Singapore	896	2,186	353	0	1,511	5,401	3,668	2,109	3,731	2,338	8,223	4,380
Thailand	96	504	56	1,186	0	1,865	1,373	948	2,375	2,754	3,420	3,886
ASEAN	1,330	3,110	852	7,991	2,458	16,296	11,061	5,772	10,772	22,621	21,900	16,574
East Asia	1,199	1,571	1,268	4,461	1,658	10,178	13,401	14,402	22,971	22,677	58,196	31,344
Other Asian countries	523	734	385	2,304	1,113	5,065	21,953	29,649	10,904	13,588	14,609	17,166
Other developing countries	1,669	1,477	1,525	7,306	2,810	14,796	33,708	13,839	99,912	46,033	96,150	148,674
Japan	3,427	3,816	1,503	9,632	5,493	23,945	42,623	16,087	37,942	0	93,128	59,884
United States	1,734	2,925	1,823	6,824	2,753	16,143	31,133	10,016	64,255	42,267	0	84,862
Europe	3,022	2,541	1,178	6,140	3,751	17,138	23,013	21,027	156,153	30,244	102,994	1,027,606
	(export share in percent)											
Indonesia	0.0	1.4	0.8	8.1	0.8	3.0	9.8	4.3	7.8	46.8	17.0	12.6
Malaysia	1.1	0.0	0.9	24.1	1.6	28.0	11.5	6.1	10.2	17.8	14.4	14.2
Philippines	0.4	1.6	0.0	3.1	2.2	7.3	8.4	2.4	3.9	23.9	33.9	19.0
Singapore	3.1	7.5	1.2	0.0	5.2	18.4	12.5	7.2	12.7	8.0	28.0	14.9
Thailand	0.6	3.1	0.3	7.2	0.0	11.4	8.4	5.8	14.5	16.8	20.8	23.7
ASEAN	1.3	3.0	0.8	7.7	2.4	15.7	10.7	5.6	10.4	21.8	21.2	16.0
East Asia	0.7	0.9	0.8	2.7	1.0	6.1	8.0	8.6	13.7	13.5	34.7	18.7
Other Asian countries	0.6	0.8	0.4	2.5	1.2	5.5	24.0	32.4	11.9	14.9	16.0	18.8
Other developing countries	0.4	0.3	0.3	1.5	0.6	3.1	7.1	2.9	21.0	9.7	20.2	31.3
Japan	1.2	1.4	0.5	3.5	2.0	8.6	15.3	5.8	13.6	0.0	33.4	21.5
United States	0.5	0.9	0.6	2.1	0.8	4.9	9.5	3.0	19.6	12.9	0.0	25.8
Europe	0.2	0.2	0.1	0.5	0.3	1.4	1.8	1.7	12.5	2.4	8.2	82.2

(continued)

Table 6—Continued

Exporting Country	Importing Country											
	ASEAN ^a					Developing Countries ^b				Industrial Countries ^c		
	IN	MA	PH	SI	TH	AS	EA	OA	OD	JA	US	EU
	(import share in percent)											
Indonesia	0.0	1.7	1.9	3.8	0.9	0.6	1.2	0.9	0.4	5.1	0.8	0.2
Malaysia	2.2	0.0	2.9	14.7	2.1	7.2	1.9	1.7	0.6	2.5	0.8	0.3
Philippines	0.3	0.8	0.0	0.6	1.0	0.6	0.4	0.2	0.1	1.1	0.6	0.1
Singapore	6.6	13.2	4.1	0.0	7.6	5.2	2.2	2.2	0.9	1.2	1.8	0.3
Thailand	0.7	3.0	0.6	2.7	0.0	1.8	0.8	1.0	0.5	1.5	0.7	0.3
ASEAN	9.9	18.8	9.8	18.2	12.4	15.7	6.7	6.1	2.5	12.1	4.8	1.3
East Asia	8.9	9.5	14.6	10.2	8.3	9.8	8.1	15.2	5.3	12.1	12.7	2.5
Other Asian countries	3.9	4.4	4.4	5.3	5.6	4.9	13.3	31.3	2.5	7.2	3.2	1.4
Other developing countries	12.4	8.9	17.6	16.7	14.1	14.3	20.4	14.6	23.0	24.6	20.9	11.8
Japan	25.4	23.0	17.4	22.0	27.6	23.1	25.8	17.0	8.7	0.0	20.3	4.8
United States	12.9	17.7	21.0	15.6	13.8	15.6	18.8	10.6	14.8	22.5	0.0	6.8
Europe	22.4	15.3	13.6	14.0	18.8	16.5	13.9	22.2	35.9	16.1	22.4	81.8

Source: IMF 1992a.

Notes: Bilateral trade flows are based on the value of imports by country. East Asia consists of Hong Kong, Korea, and Taiwan. Europe consists of European industrial countries, as classified by the IMF.

^aIndonesia (IN), Malaysia (MA), the Philippines (PH), Singapore (SI), Thailand (TH), and ASEAN including Brunei (AS).

^bEast Asia (EA), other Asian countries (OA), and other developing countries (OD).

^cJapan (JA), United States (US), and Europe (EU).

ASEAN imports. By comparison, intra-ASEAN trade accounted for only about 16 percent of ASEAN exports and imports combined. If intra-ASEAN trade involving Singapore is excluded, the extent of intra-ASEAN trade falls to a level lower than that for ASEAN trade with the East Asian NICs and the developing countries outside of Asia.

These observations, combined with the previous discussion of the structure of the ASEAN economies and their composition of trade, support the view that the ASEAN economies are essentially competitive rather than complementary. As discussed in Chapter 3, this means that ASEAN comparative advantage and greatest gains from trade lie mainly in trade with the major industrial countries and more advanced countries, including Singapore, whose relative endowments of physical and human capital, basic labor, and natural resources are substantially different from those of the ASEAN countries.²⁰

²⁰Further support for this view is provided by the author in an econometric analysis of the sources of comparative advantage in the trade of the ASEAN countries with a large sample of industrial and developing countries (DeRosa 1993).

ASEAN ECONOMIC ARRANGEMENTS AND THE FREE TRADE AREA PLAN

With the signing of the so-called Bangkok Declaration, the Association of South-east Asian Nations was founded in 1967.²¹ Its original goals were mainly political and were shaped predominantly by concerns about threats to political security among the (then five) fledgling Southeast Asian countries, often from insurgent elements within their own borders. Today, the political aspect of the association remains significant, but other dimensions of the organization and its activities have increased in relative importance. These activities include the pursuit of economic arrangements to promote regional integration and particularly greater intrabloc trade. They also include the coordination of common external economic goals and policies in relation to the major industrial countries; participation in multilateral forums such as the Uruguay Round of trade negotiations; and expansion of economic relations with other Asian developing countries, including Cambodia, Laos, Myanmar, and Vietnam, which became the seventh member of ASEAN in July 1995.²²

Although the Bangkok Declaration firmly stated the objective of increasing economic integration among the ASEAN countries, the organization did not immediately formulate specific policies to achieve the objectives of the declaration. In the early 1970s, the United Nations (UN) provided ASEAN with an analysis of the possibilities for expanding regional economic cooperation and submitted specific proposals for promoting greater intraregional trade and coordination of investment activities (United Nations 1972). The UN proposals called for the establishment of preferential trading arrangements among the ASEAN countries and the development of complementary medium- and large-scale investment projects in the five original ASEAN countries. The proposals were far from novel; they shared much by way of design with regional integration schemes in Latin America and mirrored prevailing rationales for regional arrangements to promote economic development. Notwithstanding the underlying competitiveness of the lower-income ASEAN economies, the proposals upheld the notion that coordinated trade and investment policies could successfully promote the development of complementary economic structures in developing countries. Carefully formulated regional investments in complementary activities—for instance, in the automobile manufacturing sector—would enable the benefits of greater economies of scale in production and marketing to be shared more

²¹The Bangkok Declaration and other early ASEAN accords are reprinted in ASEAN 1978.

²²For an overview of the early history of ASEAN economic and political cooperation efforts, see Wong 1985. Also, Rieger 1991 provides a valuable compilation and chronology of ASEAN economic cooperation activities, including the formal dialogues that ASEAN periodically conducts with the individual major industrial countries.

or less equally among the ASEAN countries through shared access to the larger market formed by the ASEAN economies as a whole.

The major elements of the UN proposals were adopted in 1976, when, following the fall of Vietnam, Laos, and Cambodia to communism in the early 1970s, a new wave of concern for security swept across the ASEAN region. In 1976, the ASEAN heads of state, meeting in Bali, agreed to establish the norms for two (and subsequently three) coordinated investment programs and a preferential system of trading arrangements (ASEAN 1978).

Coordinated Investment Programs

The Bali Summit promoted the view that the long-term success of ASEAN economic integration efforts lay in coordinating related investment projects in member countries, with the objective of promoting the growth of complementary economic structures among the countries and thereby the expansion of intraregional trade. Two investment programs, the ASEAN Industrial Projects (AIP) program and the ASEAN Industrial Complementation (AIC) scheme, were established in 1978. In 1980, these programs were followed by the implementation of a third program, the ASEAN Industrial Joint Ventures (AIJV) program.²³

The AIP program called for the ASEAN governments to jointly develop large-scale industrial projects in each member country, using the availability of abundant natural resources as the primary basis for selecting and locating projects. The first five AIP projects to be identified were mineral-processing plants in the four natural resource-abundant member countries and a diesel engine-manufacturing plant in Singapore. These projects were to enjoy monopoly advantages, and their outputs were to have preferential access to markets in the ASEAN countries. The AIP projects have encountered numerous difficulties, however, and in some cases they have been abandoned altogether. National authorities were reluctant to give effective monopoly status to AIP projects and viewed the projects as too costly to develop by world standards, despite their welcomed objective of using relatively abundant local inputs.

The AIC scheme and, subsequently, the AIJV program instead encouraged private sector development of regional investment projects. The first program envisioned the development of coordinated industrial projects in at least four Southeast Asian countries by private sector interests. The ASEAN Chambers of Commerce and Industry, in consultation with national authorities, would coordinate the projects. These projects would enjoy special privileges, mainly exclusive rights to produce new products in the ASEAN region for a limited number of years and preferential tariff treatment within the trading bloc. As of 1987, 30 AIC project proposals had been considered but only 2 had been approved, both in the automotive industry.

Shortcomings in the AIC scheme were apparent very early and mainly stemmed from the inherent difficulties of formulating and coordinating investment projects across ASEAN countries. Again, national authorities raised concerns about the

²³Extensive reviews of these programs are provided in Lim 1987 and, more recently, in Pangestu, Soesastro, and Ahmad 1992. For a closer glimpse of the political economy of the ASEAN regional investment programs, see Yuezhen 1987.

economic efficiency and international competitiveness of the projects, especially given the special privileges to be granted to the new firms.

The AIJV program, adopted in 1980, aimed at overcoming the inefficiencies created by the AIC scheme's requirement that investors from several ASEAN countries participate in the projects. Although goods produced by AIJV projects would still enjoy ASEAN-wide tariff preferences, they would be required to be internationally competitive in quality and price. To make this possible, the projects could involve investors from as few as only two ASEAN countries and, most important, could involve investors from outside the region so long as the ASEAN national equity share was at least 51 percent. Despite these improvements, however, no AIJV projects were implemented during the first six years of the program.

In sum, the successful adoption of integrated investment projects in the ASEAN region has proven elusive. Like similar schemes in Latin America, reviewed recently by Nogués and Quintanilla (1993) and Edwards (1993), the ASEAN regional investment arrangements have generally been too cumbersome to offer much promise of achieving greater complementarity of economic structures. In addition, there is a familiar political problem. In each of the ASEAN countries, vested economic interests, including those associated with inefficient joint ventures established with foreign multinational corporations behind high tariff walls or administered protection mechanisms, remain concerned for the security of their local investments. The ASEAN investment arrangements pose twin threats. First, these arrangements would allow direct investment in local markets by potential economic rivals in other ASEAN countries. Second, they would allow preferential treatment for imports from other ASEAN countries. Although planners originally envisioned that a sufficient balance of interests across member countries would overcome any resistance to the investment programs, striking this balance by reaching consensus among the ASEAN Secretariat, government bureaucracies, and private sector associations has proven too difficult.

The Preferential Trading System

History and Proposals for Change

The most visible program to promote regional economic cooperation among the Southeast Asian countries is the ASEAN system of preferential trading arrangements (PTA), adopted in 1977. Since its inception, the PTA has sought to expand intrabloc trade by reducing tariffs and nontariff barriers on goods wholly or substantially produced in member countries (ASEAN 1978). By stages it has evolved into a mechanism for negotiating trade preferences among member countries. But like the regional industrial projects, the ASEAN system of preferential trading arrangements has achieved only modest results. Again, both economic and political factors appear responsible. These factors include the underlying competitiveness of the ASEAN economies and the vested economic interests in each country that oppose the freer movement of goods and productive resources within Southeast Asia.

Preferences under the PTA were first exchanged on a product-by-product basis and encompassed only tariffs. The margins of preference were originally about 10 percent and applied only to products that involved little or no trade between the ASEAN countries (such as snow removal equipment). Additional impediments to

wider application of preferences included the requirement that the final stage of product fabrication must occur within the borders of member countries and that at least 50 percent of the content of the products themselves must come from ASEAN countries. These rules of origin favored expansion of trade in regionally produced goods, but they also added a costly layer of bureaucratic administration to customs inspections, hindering greater expansion of trade.²⁴

A second stage in the evolution of the PTA occurred with the adoption of across-the-board tariff reductions on intrabloc trade, beginning in the early 1980s (Wong 1985; Meyanathan and Haron 1987). These reductions were generally larger, about 20 percent. Initially, they were extended to categories of traded goods in which the value of imports amounted to less than \$50,000, but this ceiling was progressively raised to \$2.5 million and finally \$10 million. These across-the-board tariff reductions substantially increased the total number of trade categories eligible for preferential treatment under the PTA. At the same time, however, ASEAN countries adopted national safeguard provisions to protect domestic producers from serious injury from unanticipated surges of imports of "sensitive products." Moreover, in many instances the products identified by the across-the-board tariff reductions were in fact predominantly supplied by countries outside the region.

By the mid-1980s, little appreciable increase in intraregional trade had been recorded by the ASEAN countries as a result of either stage in the evolution of the ASEAN trading arrangements. Thus, new proposals for substantially increasing the PTA coverage of intra-ASEAN trade were put forward. Of these, the so-called Rieger proposal received the widest attention (Rieger 1985; Naya and Imada 1987). This proposal called for (1) the creation of a customs union among Indonesia, Malaysia, the Philippines, and Thailand, and (2) the establishment of a free trade area between Singapore and the other (then) four ASEAN countries. To ensure that no "import leakage" might occur through the free port of Singapore, rules of origin would continue to apply.

The main contribution of the Rieger proposal was to outline how greater integration of trade policies might be coordinated among ASEAN countries with sharply different levels of protection. Specifically, the proposal envisaged the maintenance of Singapore's policy of mostly free trade, while attempting to harmonize the protection policies of the four remaining ASEAN countries. Within the regional customs union, the common external tariff system would involve some reduction in the tariff levels of Indonesia and the Philippines, with the long-term objective of reducing tariffs in these countries and Thailand to a level somewhat above the average in Malaysia (15 percent). Thus, the Rieger proposal offered an approach to accommodating the economic interests of both high- and low-protection ASEAN countries.

Despite these attractive features, the ASEAN community did not endorse the Rieger proposal because it still posed considerable adjustment costs, particularly for the countries that would form the proposed customs union. Singapore would be spared from having to adopt protectionist measures, but Malaysia would be initially required to increase its average level of protection appreciably and, in doing so, the

²⁴A particular concern in the administration of the PTA rules of origin is that imports from outside the region can enter the ASEAN region through the free port of Singapore and then be re-exported to other ASEAN countries, thereby circumventing the general tariff or other import restrictions enforced by the latter countries.

country would face a substantial redistribution of its resources to less efficient uses. Moreover, economic interests in Indonesia, the Philippines, and Thailand were threatened by the prospect of having to adjust to much lower average tariff levels. Finally, the Rieger proposal also posed a threat to the maintenance of protection in other forms, especially administered licensing and other quantitative restrictions on imports, which would eventually have to be eliminated if the plan were to be meaningfully implemented.²⁵

The final stage in the evolution of the ASEAN preferential trading system came in 1987, when the ASEAN heads of state, meeting in Manila, agreed to widen the PTA margins of preference from 25 percent to 50 percent and to liberalize other facets of the ASEAN preferential trading arrangements, including the rules of origin and preferences granted to goods produced by ASEAN cooperative projects and joint ventures. By the beginning of the 1990s, however, little progress had been made in implementing these changes, and there emerged wider recognition of the importance of nontariff barriers as a major impediment to achieving greater intra-ASEAN trade under the PTA system.

Quantitative Studies

The PTA has been widely criticized for its limited coverage of intrabloc trade. DeRosa (1988), for instance, reported that the frequency of preferential tariff rates in the ASEAN countries was on the order of only 10 to 20 percent of all categories of traded goods, except in the case of the Philippines, which was found to extend preferential rates on about 50 percent of its imports from other ASEAN countries. Even these statistics, however, may be misleading because they do not take into account the application of safeguards and other nontariff measures in the ASEAN countries that effectively abrogate many parts of the country schedules of PTA tariffs.

In the early 1980s, some empirical studies attempted to measure the economic benefits of the ASEAN preferential trading system, taking into account the goods categories covered by preferential rates and the margins of preference extended by each country, the extent of both regional and extraregional trade in the categories identified, and econometric or other (typically a priori) estimates of price elasticities of demand for imports.²⁶ These studies focused mainly on partial equilibrium relationships determining the static demand and supply of ASEAN exports and imports, on aggregate and multicommodity bases. Also, rather than employing more modern methods in applied welfare economics, the studies judged the benefits of trade preferences among the ASEAN countries mainly in terms of estimated trade creation

²⁵It should also be noted that the Rieger plan would have violated the strictures of Article XXIV of the GATT, prohibiting countries forming a customs union from raising the level of their tariffs above that agreed to as a condition of their accession to or continued membership in the GATT.

²⁶See, especially, Naya 1980; Ooi 1981; Devan 1987; and Tan 1982. More recently, Imada (1990, 1993) presents extensive estimates of the potential trade creation and trade diversion effects of more broadly conceived ASEAN preferential trading systems (including a free trade area), using essentially the same partial equilibrium approach to estimating the trade effects of the ASEAN preferential trading system employed by earlier investigators.

and trade diversion effects, following Viner (1950).²⁷ If trade creation effects outweighed trade diversion effects, the trading arrangements were judged to be beneficial to the ASEAN countries and the world economy as a whole, because resources might be viewed as moving on balance to more productive uses, particularly in traded goods sectors exposed to the discipline of international competition.²⁸

Early studies reported the existence of ASEAN preferences formally bound to national import tariff schedules in only a limited number of major trade categories (chemicals and nonelectrical machinery), with the major concentration of these preferences found in trade categories that typically involved little, or no, trade between ASEAN countries. Owing to the low levels of intra-ASEAN trade, narrow margins of preference (generally less than 25 percent), and typically low estimates for price elasticities of import demand, the studies found that the ASEAN preferential trading arrangements provided little appreciable benefits in terms of potential trade creation. Ooi (1981), for instance, found that for the Philippines and Thailand, the only countries considered by the study, trade creation amounted to less than 1 percent of total imports. Moreover, although the studies did not often directly estimate trade diversion effects (through, for instance, the application of elasticity of substitution or cross-price elasticity parameters), they generally concluded that a substantial proportion of the estimated trade effects would in fact constitute trade diversion rather than trade creation, because the preferences were concentrated in product categories for which extraregional trade was several times greater than intraregional trade and for which production in the ASEAN countries was limited.

In the late 1980s, when the ASEAN heads of state agreed to raise the PTA margins of preference to 50 percent, wider recognition of the importance of nontariff barriers hindering intra-ASEAN trade came to the fore. Studies by Ibrahim and Isa (1987) and Ooi (1987), for instance, documented the importance of nontariff barriers in hindering greater intra-ASEAN exports by Malaysia and Singapore, respectively.²⁹ More recently, Naya and Plummer (1991) link the inefficacy of the PTA system to extensive reliance on nontariff barriers in the ASEAN countries, based on their observation that while the total value of ASEAN exports increased from about US\$6 billion to over US\$100 billion from 1970 to 1988, the share going to markets within ASEAN declined from 21 percent to 18 percent (from 6 percent to 4 percent, excluding Singapore) over the same period.

²⁷Two methods in applied welfare economics employed frequently today, because of their development from the fundamentals of the neoclassical trade theory as well as modern welfare economics, involve the measurement of so-called Harberger triangles and Hicksian equivalent variations in income. The main analysis of this chapter will employ a variant of the latter method, following the practice of most applications of compatible general equilibrium (CGE) models (Shoven and Whalley 1984). On the use of Harberger triangles and the underlying relationship of the concept of economic (consumer and producer) surplus to neoclassical and Hicksian measures of economic welfare, see Leamer and Stern 1970; Harberger 1971; Willig 1976; and Just, Hueth, and Schmitz 1982.

²⁸In most instances, only the potential trade-creation effects of the ASEAN trading arrangements were estimated, under the assumption that the increased trade given by parameter estimates for own-price elasticities of import demand would indicate the outermost boundary of the substitution of efficient intraregional trade for less efficient domestic production.

²⁹For a broader view of the extent of nontariff barriers in ASEAN as well as other developing Asian countries, see DeRosa 1986, 1988.

The Free Trade Area Plan

Origins and Commencement Date

The ASEAN economic arrangements have never been bound by formal quantitative objectives, beyond the general goal of increasing regional trade and economic integration. Rather, they have evolved as a political framework for removing restrictions to greater intraregional trade and investment by consensus. Although this framework has yielded modest results at best, support for the objective of increasing regional economic integration has remained strongly embedded in the major Southeast Asian countries. What has arguably distinguished ASEAN from other regional blocs of developing countries with similar aspirations, however, is the bloc's extensive program of consultations and dialogues on social as well as economic and political concerns. Indeed, the group has become particularly effective in developing and articulating shared perspectives on major issues facing it.

Despite the extensive evidence indicating that the ASEAN cooperative economic arrangements have not measurably improved economic well-being in Southeast Asia, ASEAN policymakers continued to regard regional economic cooperation favorably. Thus during the early 1990s, the objective of increasing regional integration among the ASEAN economies received new impetus from the growing bilateralism of the major industrial countries and the uncertainty that surrounded the final outcome of the Uruguay Round of multilateral trade negotiations. In January 1992, the ASEAN heads of state, meeting in Singapore, announced an agreement to establish the ASEAN Free Trade Area (AFTA) beginning in 1993 and to implement it fully by the year 2008 (ASEAN 1992c).

The primary rationale for the new free trading area is the need perceived by the ASEAN leaders for the Southeast Asian countries to move, for international competitiveness reasons, toward a degree of regional economic integration more closely matching that of other regional groupings of industrial and developing countries. But progress in implementing the new ASEAN trading arrangements may ultimately be slower, and possibly less extensive, than envisioned in the Singapore Declaration. Indonesia and the Philippines are particularly concerned about the distribution of economic gains under the new system. Officials in these more highly protected economies fear that their domestic producers will not be able to compete with more efficient producers in other ASEAN countries. The Singapore Declaration grants the two countries a longer time horizon for implementing the new trading arrangements, but the concerns raised by officials in these two countries, as well as other member countries, became more pronounced as the 1993 commencement date for the new plan drew near. In late 1993 it was announced that the AFTA plan would not begin on schedule. The commencement date was finally pushed back to January 1995, when the ASEAN ministers, meeting in Thailand in late 1994, agreed to broaden the coverage of the plan to include trade in agriculture as well as manufactures and to complete the implementation of the new free trade area five years ahead of schedule, in the year 2003.

From the wider perspective of ASEAN economic relations with other countries, the ASEAN Free Trade Area agreement raises some important questions. In particular, the ASEAN countries have not addressed how the AFTA plan will achieve its objectives without significant diversion of trade away from countries outside of Southeast Asia or how, as suggested in the Singapore Declaration itself, the ASEAN

Free Trade Area will contribute to integrating consumers and producers in the ASEAN countries more fully into the world economy. And finally, an issue of some importance in this study is how “disprotected” primary commodity-producing sectors in the Southeast Asian countries, especially agriculture, should expect to fare under the new ASEAN trading arrangements.

Main Features

The basic elements of the AFTA plan are straightforward.³⁰ Under what is termed the common effective preferential tariff (CEPT) scheme, each ASEAN country will seek to reduce the level of its tariffs beginning in 1995. During the first five years, tariff levels are to be reduced substantially. Then, during the remaining three years of the agreement, each member country will seek to reduce tariff levels to a range of 0 to 5 percent. Although the new scheme makes provisions for safeguard measures in cases of “serious injury” to domestic producers, it explicitly calls for the simultaneous elimination of nontariff barriers, including foreign exchange restrictions. The new scheme also specifies a reduction in the ASEAN content requirement for goods receiving preferential treatment to 40 percent, from 50 percent under the former PTA system.

Under the ASEAN Free Trade Area plan, the liberalization of intra-ASEAN trade is to be accomplished following schedules of preferential tariff reductions to be announced by each country annually. Whether the process will in fact prove to be entirely automatic is unclear. Indeed, this uncertainty seems to be recognized by the AFTA plan itself, because the plan singles out 10 to 15 categories of manufactures for accelerated tariff reductions (to the 0 to 5 percent range) during the plan’s first phase (Table 7). This group of products is an important admixture of goods of keen interest to exporters and policymakers in each of the ASEAN countries. Vegetable oils and wooden furniture, for instance, are of interest to manufacturers in several of the natural resource-abundant countries, and producers who wish to expand their output of apparel, textiles, and electronic components are found in all ASEAN countries. Finally, more capital-intensive products, such as cement, chemicals, and paper pulp, also appear on the list of products targeted for accelerated trade liberalization. As Table 7 shows, the levels of protection from import competition associated with these products are similar, on average, to those for imports of all manufactures in each of the ASEAN countries. Also, in many cases nontariff barriers are enforced with great frequency, which emphasizes the importance of explicitly liberalizing nontariff barriers as well as tariff measures as part of the AFTA scheme to liberalize ASEAN trade relations.

Finally, the founders of the ASEAN Free Trade Area envision the new pact as consistent with, and even as contributing to, the outcome of the Uruguay Round of multilateral trade negotiations. This view, however, seems highly subjective given the essentially discriminatory nature of the new, as well as former, ASEAN preferential trading arrangements. The next chapter will investigate the new AFTA plan in quantitative terms to assess whether it should be expected to expand economic relations among the ASEAN countries in a manner consistent both with the promotion of global trade relations and with substantial gains in intraregional trade, ASEAN agriculture, and ASEAN economic welfare.

³⁰The AFTA plan is outlined in three basic documents signed by the ASEAN heads of state in January 1992 (ASEAN 1992a, 1992b, 1992c). Also, see Imada and Naya 1992.

Table 7—ASEAN import restrictions on manufactures selected for accelerated trade liberalization under the AFTA plan, 1987

Selected Manufactures	SITC ^b	Average Rate of Tariffs plus Paratariffs (Frequency Ratio of Nontariff Barriers ^a)				
		Indonesia	Malaysia	Philippines	Singapore	Thailand
				(percent)		
Vegetable oils	22 + 42	29.3 (100.0)	4.6 (0.0)	31.4 (26.0)	0.0 (4.0)	49.7 (96.0)
Cement, ceramic, and glass products, and gems and jewelry	66	26.1 (100.0)	18.3 (13.4)	40.5 (33.5)	0.0 (0.0)	48.1 (8.0)
Chemicals, plastics	5	11.0 (95.6)	9.4 (3.0)	23.4 (47.7)	0.0 (49.0)	35.5 (6.0)
Pharmaceuticals	54	4.8 (100.0)	3.3 (0.0)	17.5 (95.0)	0.0 (95.0)	30.5 (0.0)
Fertilizers	56	0.0 (100.0)	0.6 (0.0)	22.6 (100.0)	0.0 (0.0)	10.0 (0.0)
Rubber products	62	10.3 (66.1)	32.6 (0.0)	33.7 (46.3)	0.0 (0.0)	52.0 (0.0)
Leather products	61 + 83	28.2 (100.0)	27.5 (0.0)	38.9 (29.4)	0.2 (0.0)	64.1 (0.0)
Paper pulp	64	29.4 (84.5)	16.4 (0.0)	40.5 (57.9)	0.0 (0.0)	40.7 (21.5)
Textiles, apparel	65 + 84	32.7 (87.5)	28.9 (0.5)	48.2 (12.8)	1.7 (8.5)	61.5 (0.9)
Electronics, copper cathodes	76 + 77	25.2 (80.5)	20.5 (5.4)	37.4 (98.1)	0.0 (11.8)	43.3 (15.6)
Wooden furniture	82	42.2 (100.0)	40.4 (0.0)	52.1 (46.4)	2.2 (0.0)	63.6 (0.0)
Memorandum items						
Primary commodities	(0 through 4) + 68	14.7 (98.9)	8.7 (4.5)	31.9 (40.5)	0.1 (15.3)	38.0 (24.4)
Manufactures	(5 through 8) less 68	19.6 (93.1)	16.2 (3.2)	33.5 (46.3)	0.4 (14.1)	42.5 (7.8)
Total selected manufactures		22.8 (92.0)	19.3 (1.9)	36.3 (54.5)	0.4 (12.0)	46.4 (14.3)
All goods	0 through 9	18.2 (94.7)	14.3 (3.7)	33.1 (44.9)	0.3 (14.7)	41.2 (12.4)

Sources: ASEAN 1992 and Appendix 1 of this report.

^aPercentage of national tariff schedule lines affected by nontariff barriers within the traded good category.

^bStandard international trade classification divisions.

6

QUANTITATIVE ANALYSIS OF THE AFTA PLAN

The AFTA plan raises a number of questions about the effects of the new trading arrangements on ASEAN trade and production, and ultimately on economic welfare in the five major Southeast Asian countries. By its nature, the AFTA plan discriminates against goods imported from outside of the ASEAN region, but it might also discriminate against production of agricultural and other primary commodities to the extent that it promotes regional production of manufactures before other goods. The significance of these aspects of the plan is uncertain, however, without quantitative analysis that takes into account the economic relationships governing production, consumption, and trade in the ASEAN countries. This chapter presents a comparative static analysis of the AFTA plan that employs a simple CGE model of the regional as well as global trade relations of the ASEAN countries to quantify the medium- to long-term effects of liberalizing the trade regimes of the ASEAN countries.

The ASEAN Trade Simulation Model

Overview

The ASEAN trade simulation model is a static general equilibrium model that is patterned mainly after the so-called Michigan model of production and trade (Deardorff and Stern 1986), but also shares many features with other CGE models applied widely in analyzing both international trade and development policy issues.³¹ While short-run dynamic considerations are also undoubtedly important, this analysis does not investigate the comparative dynamics underlying the ASEAN trade simulation model, under the assumption that the so-called correspondence principle holds (Samuelson 1947).³²

For each of the major ASEAN countries, simultaneous linear equations depict the conditions for equilibrium in markets for 26 categories of traded goods (including "semitradables"), a nontraded good, and (assumed) homogeneous labor services. Based on the assumption of utility- and profit-maximizing behavior by consumers and producers, goods satisfy both intermediate and final demands for consumption.³³

³¹For an introduction and general review of CGE modeling and its applications, see Dervis, de Melo, and Robinson 1982; Shoven and Whalley 1984; and Robinson 1989. Also, see Shoven and Whalley 1992; and Devarajan, Lewis, and Robinson 1996.

³²The equation listing of the model and a description of the model variables and parameters are provided in Appendix 2.

³³Among the simplifying assumptions underlying the analysis is that the elasticities of substitution in intermediate and final demand are the same in value in each traded goods category of the model.

Primary factors of production are fixed in aggregate supply and fully employed at their respective value of marginal product. Labor is assumed to be mobile between producing sectors, but other primary factors of production, such as physical capital and natural resources, are assumed to be specific to individual sectors. Although labor and other combined primary factors are assumed to be substitutable for one another in value-added, all intermediate inputs to production and the quantum index of value-added itself are combined only in fixed proportions.³⁴ Expenditures on final demand are determined endogenously, with aggregate changes in revenues from import duties assumed to be redistributed to consumers and accordingly reflected fully in final demands for both traded and nontraded goods. Finally, "closure" of the model takes the neoclassical form of an international payments constraint that, through adjustment of the nominal exchange rate and other variables, requires aggregate expenditures on domestic and foreign goods to equal the sum of revenues from production plus possible sources of external financing. In this last connection, the output of the nontraded goods sector in each country is assumed to be the numeraire commodity, with price equal to unity in local currency terms. Under this assumption, the nominal exchange rate is equivalent to the real exchange rate between traded and nontraded goods in each ASEAN country.³⁵

Following Armington (1969), traded goods are assumed to be differentiated according to their place of production. Specifically, the model distinguishes similar goods produced by all countries, whereby the producers (as a group) of each geographically differentiated commodity or manufactured product face identifiable demands for their output in their home country and each importing country.³⁶ The result is a system of bilateral demands for traded goods that facilitates the

³⁴Production in each sector of the model is assumed to be separable, such that inputs of primary factors may be considered a single aggregate that is combined in fixed proportions with similar aggregates of different intermediate goods. On the theory of separable production functions, see Solow 1956. For the derivation of the production functions employed in the ASEAN trade simulation model, see Deardorff and Stern 1986.

³⁵For non-ASEAN countries, the exchange rate, sectoral prices, and levels of primary and industrial output are assumed constant. The equivalence of the nominal and real exchange rate under the assumptions of the ASEAN trade simulation model is discussed, for instance, in Robinson 1989. On the importance in economic theory of the nontraded goods sector and the real exchange rate in open economies, see Salter 1959; Swan 1960; Corden 1971; and Dornbusch 1974. On empirical aspects of analyzing the real exchange rate, see Edwards 1989; Mundlak, Cavallo, and Domenech 1990; and Devarajan, Lewis, and Robinson 1993.

³⁶The Armington system of bilateral demands for traded goods is derived formally from utility functions that are homogeneous and separable, following the utility-tree notion developed by Solow (1956), Strotz (1957), and others. The upper-level utility functions governing preferences for goods are assumed to be Cobb-Douglas in form, while the lower-level ones governing preferences for geographically differentiated products are assumed to have the more general, constant elasticity of substitution form. The upper-level functions imply that income and uncompensated own-price elasticities of demand for goods are unitary in value and all cross-price elasticities of demand for goods are zero. While these assumptions are clearly restrictive, their "neutrality" serves to focus attention on assumptions concerning the extent of substitution among products in the lower-level utility functions and on the implications of the assumptions for the resulting system of bilateral demands for traded goods. For further discussion of the implications of separable utility functions in demand theory, see Green 1964 and Deaton and Muellbauer 1980.

analysis of discriminatory tariffs and nontariff barriers to imports from non-ASEAN countries.³⁷

The representation of tariffs is straightforward in the model; with exchange rates, tariffs translate world prices of foreign-produced goods into domestic prices. A preferential reduction of tariff rates applied to goods imported from ASEAN countries lowers the domestic price of the goods, thereby increasing demand for imports from ASEAN countries (trade creation) and simultaneously reducing demand for competing imports from non-ASEAN countries (trade diversion). Following Deardorff and Stern (1986) and DeRosa (1992), nontariff barriers are also explicitly represented in the model and may be liberalized either by reducing tariff-equivalent measures of administered protection (that is, nontariff barriers) or by increasing the quantity of administered imports directly.³⁸ Along with actual or assumed values for the parameters describing fundamental behavioral and technical relationships in the model, changes in trade policies represented by combinations of preferential or nondiscriminatory changes in tariffs and nontariff barriers provide the basis for simulating changes in production, trade, and related variables, including the real exchange rate, for each ASEAN country.

Finally, the ASEAN trade simulation model addresses factors relevant to economic welfare by computing variations in real absorption (expenditures on final demand deflated by the corresponding index of consumer prices). This measure of economic welfare approximates the familiar Hicksian measure of equivalent variations in income (see, for example, Shoven and Whalley 1984, 1992). The measure, however, is computed independently of the national welfare function underlying the Armington demand system, avoiding an important downward bias in the estimation of changes in economic welfare in linear, proportional-change models such as the ASEAN trade simulation model.³⁹

³⁷Bilateral demands for similar products in each importing market are interrelated by an elasticity of substitution parameter, following the original specifications of the Armington model (Armington 1969). More recent models, including the Michigan model (Deardorff and Stern 1986), frequently specify two different elasticity of substitution parameters to represent demand conditions for similar products in each importing country, one giving the substitution in demand of imports for one another and the other giving the substitution in demand of domestic output for an index of competing imports combined. The latter, "split-level" approach to specifying demand conditions differentiates domestic products from imported products to a greater extent than in the original Armington model, to emphasize the possibility of greater homogeneity between similar imported products than between similar domestic and imported products. While this specification issue has important conceptual implications for the extent of the tradability of domestic output, it holds more immediate implications for relative estimates of trade creation and diversion in trade-focused CGE models. Within the range of most econometric estimates of demand substitution elasticities, indicated later in the text, the simpler Armington demand specification adopted by the ASEAN trade simulation model would tend to result in higher estimates of trade creation and lower estimates of trade diversion in empirical applications. Thus, relative to other possible specifications of multisector models of ASEAN trade relations, the model specified here may be significantly biased in favor of finding net trade creation in connection with the formation of the ASEAN Free Trade Area.

³⁸See equations (1a) and (1b) in Appendix 2 for details of the two ways in which changes in nontariff barriers may be represented in the ASEAN trade simulation model.

³⁹For highly protected economies direct calculation of Hicksian variations in income under general and other trade liberalization scenarios can result in improbable declines of economic welfare because of the dominant weight of domestically produced goods in initial consumption expenditures. In the ASEAN trade simulation model, changes in real absorption are computed on the basis of changes in national income, eliminating the demand-side problem related to the base-period weights of domestic versus imported goods in national expenditures.

Parameter Values

Underlying the ASEAN trade simulation model is an extensive set of trade and industry statistics, principally for the ASEAN countries but also for their major trading partners (Table 8). The model also incorporates information about the structure of nominal protection in the ASEAN countries and assumed values for key substitution elasticity parameters. The 26 categories of traded goods distinguished in the model fall into 7 broad categories of primary commodities and manufactures: foods, agricultural raw materials, other primary commodities, chemicals, iron and steel, machinery and equipment, and other manufactured goods. For each category of traded goods, statistics on the bilateral imports of the ASEAN countries and 20 other industrial and developing countries were gathered for 1988 (1987 for Bangladesh), the most recent year for which the requisite trade statistics were available for countries at the time of data collection for the study. Using these data, matrices of world trade for each commodity category were constructed, identifying the origin as well as the destination of trade flows by commodity for each ASEAN country, other developing Asian countries, the major industrial countries, and the rest of the world.⁴⁰

The ASEAN trade simulation model requires estimates of domestic consumption of locally produced traded goods, or so-called internal trade flows. These flows, along with values of the parameters indicating the interindustry structure of production in the ASEAN economies, were estimated using information gathered from a set of consistent input-output tables for the ASEAN countries developed by the Global Trade Analysis Project (GTAP) of Purdue University (Hertel 1996).⁴¹ In brief, internal trade flows were estimated for each category of traded goods by applying the ratio of domestic to foreign demand in the input-output tables to the level of 1988 exports for each ASEAN country.⁴² Parameters indicating the interindustry and final uses of traded and nontraded goods in the ASEAN countries were set equal to values computed directly from the input-output tables for the five countries.

Values for two important sets of behavioral and technical parameters in the model—the elasticities of substitution in demand between the geographically differentiated products and the elasticities of substitution in production between labor and other primary factors—are compiled from values of similar parameters in CGE models for the United States (de Melo and Tarr 1992; Hanson, Robinson, and Tokarick 1993) as well as models of world production and trade (Whalley 1985; Dearnorff and Stern 1986).⁴³ For the demand elasticity parameters, the values range

⁴⁰Similar matrices might have been constructed using statistics detailing exports by reporting country to partner countries. The model relies on import data, however, because customs information about imports is frequently more accurate. Insurance and transportation charges are not explicitly considered.

⁴¹The GTAP input-output tables for the ASEAN countries are based on interindustry statistics from national sources for the years 1983 (Malaysia and Singapore) and 1985 (Indonesia, the Philippines, and Thailand). In the estimation of internal trade flows, similarly defined input-output tables were employed for Japan, Korea, and the United States, developed on the basis of data from national sources by the Institute of Developing Economies (IDE 1982).

⁴²The same methodology was applied to the data for Japan, Korea, and the United States. U.S. ratios were applied to the export statistics for Canada, Australia–New Zealand, and European countries; Korean ratios to those for other East Asian countries; and Indonesian ratios to those for other Asian countries and the rest of the world.

⁴³These models employ a number of parameter values based on estimated middle values from econometric studies of substitution elasticities for import demand and capital-labor in production, compiled by Stern, Francis, and Schumacher (1976) and Caddy (1976), respectively.

Table 8—The ASEAN trade simulation model: Goods categories and elasticity of substitution values

Goods Category	SITC ^a	Elasticity of Substitution	
		Consumption ^b	Production ^c
Primary commodities	(0 through 4) + 68	...	...
Foods	0 + 1 + 22 + 4	...	...
Cereals	041 through 045	4.0	0.6
Vegetable oils and oilseeds	22 + 42	4.0	0.6
Other foods	...	4.0	0.6
Agricultural raw materials	2 less (22 + 27 + 28)	...	...
Textile fibers	26	4.0	0.6
Other raw materials	...	4.0	0.6
Other primary commodities	27 + 28 + 3 + 68	...	...
Crude fertilizers and mineral ores	27 + 28	4.0	0.8
Mineral fuels	3	4.0	0.8
Nonferrous metals	68	4.0	0.8
Manufactures	(5 through 8) less 68	...	...
Chemicals	5	...	...
Pharmaceuticals	54	3.0	0.8
Toiletries and perfumes	55	3.0	0.8
Manufactured fertilizers	56	3.0	0.8
Other chemicals	...	3.0	0.8
Iron and steel	67	3.0	1.0
Machinery and equipment	7	...	...
Nonelectrical machinery	71 through 75	2.0	0.6
Electrical machinery	76 + 77	2.0	0.8
Transport equipment	78 + 79	3.0	0.8
Other manufactured goods	(6+ 8) less (67 + 68)	...	...
Leather and travel goods	61 + 83	2.0	0.8
Rubber products	62	3.0	0.8
Wood products	63	2.0	0.8
Paper products	64	2.0	1.0
Textiles and clothing	65 + 84	3.0	1.0
Nonmetal mineral products	66	3.0	1.0
Furniture	82	3.0	0.8
Footwear	85	3.0	1.0
Professional equipment	87 + 88	2.0	1.0
Other manufactures	...	3.0	1.0
Other			
Nontraded goods	...	...	1.0

Notes: Leaders (. . .) indicate not applicable. In addition to the ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore, and Thailand), 21 countries and country groups are covered in the model. Other developing Asian countries include China; Hong Kong, Republic of China, and Republic of Korea (East Asia); and Bangladesh, India, Pakistan, and Sri Lanka (South Asia). Industrial countries include Australia and New Zealand; Belgium, France, Germany, Italy, Netherlands, Switzerland, and United Kingdom (Europe); and Canada, Japan, and United States. Other developing and industrial countries are grouped into the rest of the world.

^aStandard international trade classification.

^bElasticity of substitution in demand for similar traded goods differentiated by country of origin.

^cElasticity of substitution in value-added among primary factors of production (ASEAN countries only).

from between 2.0 and 3.0 for manufactures to 4.0 for primary commodities. The higher elasticity values for primary commodities and for certain categories of manufactures (such as chemicals, iron and steel, and transport equipment) reflect the assumption that greater homogeneity exists among products produced by competing countries in the sectors specified, although among the sources consulted, only Hanson, Robinson, and Tokarick (1993) indicate the appropriateness of employing higher values for demand elasticities in agriculture than other sectors. Finally, for the production elasticity parameters, the values range from 0.6 for agricultural commodities and certain categories of machinery to between 0.8 and 1.0 for other commodities and manufactures, mainly depending upon the importance of labor versus land, capital, and other primary inputs to production in each sector.

The last set of parameters employed in the ASEAN trade simulation model consists of information on tariffs and nontariff barriers in the ASEAN countries for a similar date as the trade statistics underlying the model. The information is compiled from the United Nations Conference on Trade and Development (UNCTAD) inventory of trade control measures in developing countries (UNCTAD 1987, 1989), discussed in Chapter 4, and is presented in its entirety in Appendix 1. The frequency ratios of nontariff barriers provide the basis for determining the extent of such barriers in each category of goods imported by the ASEAN countries. Then the model depicts the liberalization of tariffs and nontariff barriers for the traded goods principally affected by the two forms of import restrictions.

The model also reflects the extent of nontariff barriers enforced in the non-ASEAN countries. These data are compiled from Nogués, Olechowski, and Winters 1986 and refer to trade control measures enforced by industrial countries during the early to mid-1980s. Thus, the model's simulations are conditional on basic aspects of administered protection levels in the major industrial and other developing countries in the model, as well as the ASEAN countries themselves.

The UNCTAD data on trade control measures are not sufficient to distinguish reliably between the preferential and general import restrictions enforced by each of the ASEAN countries, especially in light of the reported large numbers of exemptions from the former ASEAN preferential trading system to safeguard domestic industries or for other reasons. Thus, the model assumes that imports from all sources, including other ASEAN countries, initially face the same import restrictions. Whereas the initial levels of ad valorem tariffs (and paratariffs) are assumed to be equal to those reported in the UNCTAD inventory, appropriate values of tariff-equivalent rates of protection afforded by nontariff restrictions are problematic. Therefore, in the simulations nontariff barriers are assumed to be liberalized sufficiently to increase the quantity of administered imports directly by 25 percent. This increase is specified on an ad hoc basis, on the "naive" assumption that nontariff barriers in the ASEAN countries restrict imports to levels in the neighborhood of 80 percent of their free trade levels (which are unknown).⁴⁴ Finally, again for lack of more comprehensive information about trade and related industrial policies in the ASEAN countries, no attempt is made to adjust the baseline data, or the empirical model itself, for possible

⁴⁴In reality, nontariff barriers in the ASEAN countries might be either more or less restrictive. For instance, in cases where trade is strictly prohibited or quantitative restrictions are particularly stringent, the liberalization of administered imports would imply much greater increases in trade volumes than 25 percent.

exemptions to tariffs or nontariff barriers extended to favored industrialists or to special investment or development projects favored by national economic plans in the ASEAN countries.

Limitations of the Model

The ASEAN trade simulation model possesses a number of positive attributes, but it has some noteworthy shortcomings as well. Most important, the model yields only partial estimates of the international effects of the AFTA plan. This limitation occurs because the model illuminates the trade relations of the ASEAN countries in an asymmetric way; it reflects the simultaneous adjustment of the ASEAN economies, on the one hand, but only the partial adjustment of other economies in the model (through the adjustment of their bilateral trade flows), on the other hand. Because the ASEAN countries are mainly “small” countries in the global trading system, however, adjustment by the major industrial countries and developing countries outside of Southeast Asia to economic developments originating in the ASEAN countries is expected to be relatively minor, with little, if any, significant feedback effects on the ASEAN economies.

More generally, the ASEAN trade simulation model may be constrained by its rather rigid, and essentially static, specification of behavioral and technical relations describing consumption, production, and trade. Though these relationships provide the basis for valuable insights into economic adjustment in each country, they may still fall short of some, especially longer-term, aspects of adjustment envisioned in pure international trade theory, in which international competitive forces are frequently viewed as guiding international investment and the adoption of common production technologies across countries until relative factor rewards and prices of traded goods tend to converge in countries trading freely with one another.⁴⁵

Effects of the AFTA Plan

The simulation results presented here refer to four scenarios depicting three variants of the AFTA plan, plus an alternative policy of thoroughgoing trade liberalization in the ASEAN countries on a nondiscriminatory basis.

The first two scenarios are variants of the original AFTA plan announced in 1992, namely, complete removal of tariffs and nontariff barriers on intra-ASEAN trade in the categories of manufactures identified in Table 7 (Scenario 1) and all categories of manufactures (Scenario 2). Scenario 3 represents the variant of the AFTA plan endorsed in principle by the ASEAN economic ministers in late 1994, in which barriers to intra-ASEAN trade are removed on all categories of trade, including agricultural and other natural resource commodities.

The fourth scenario depicts a policy of nondiscriminatory liberalization of ASEAN trade relations covering all traded goods. The trade and welfare effects of this last scenario are intended to indicate the potential effects of adopting more liberal ASEAN trade

⁴⁵For related discussions of the attributes and limitations of CGE models in general, see Shoven and Whalley 1984, 1992; Winters 1986; Robinson 1989; and Devarajan, Lewis, and Robinson 1996.

relations on an unconditional most-favored-nation (MFN) basis. The MFN scenario extends the liberalization of intra-ASEAN trade under Scenario 3 to ASEAN imports from all countries, without expectation of reciprocal trade concessions from trading partners outside of Southeast Asia. In principle, trade liberalization on such an MFN basis should be expected to integrate the ASEAN economies more fully with the world economy than the AFTA plan. Indeed, the MFN scenario is expected to yield the largest improvements in ASEAN trade and economic welfare. Of greater interest here, however, is the extent to which the AFTA plan might provide economic gains similar to those under MFN liberalization, in either quantitative or qualitative terms.

Under each scenario, the simulation results indicate the adjustment in economywide variables and sectoral variables for each ASEAN country. Economywide variables include the wage rate and real exchange rate, whereas sectoral variables include the adjustment of prices, production, consumption, and trade in each sector of the model. To evaluate the relative economic benefits of the alternative trade arrangements among the ASEAN countries, the analysis considers the extent of net trade creation under the AFTA plan. Following from Chapter 3's discussion of the economic theory of regional trading arrangements, however, the analysis offers a more direct assessment of economic welfare based on computations of variations in real absorption. Finally, the analysis evaluates the implications of the AFTA plan for agriculture and other primary goods sectors using changes estimated by the ASEAN trade simulation model for production and trade in the natural resource-based sectors, particularly in the four natural resource-abundant ASEAN countries (Indonesia, Malaysia, the Philippines, and Thailand).

The simulation results are summarized in Tables 9 through 13. Appendix 3 provides more complete quantitative results for production, consumption, and international trade of each ASEAN country by the 27 traded and nontraded goods sectors in the ASEAN trade simulation model.

Economywide Effects

Main Results. Table 9 highlights the changes in economywide variables, trade by the ASEAN countries with one another and the major industrial countries (their principal trading partners), and economic welfare. As expected, the simulation results demonstrate that the broader the scope of the import liberalization, the greater the impact on economic variables. Thus, import liberalization covering all traded goods has larger effects than import liberalization covering only manufactures, and the nondiscriminatory elimination of protection measures has larger effects than preferential reduction of political barriers to international trade.

The changes in economywide variables reveal patterns of adjustment across the ASEAN countries and across different liberalization scenarios that provide important keys to understanding the simulation results more broadly. Expenditures on final demand and the wage rate generally rise in response to trade liberalization, but the increases in both variables tend to be greater for Singapore than for the other countries under the AFTA scenarios (Scenarios 1 through 3) and just the reverse under the MFN scenario (Scenario 4). For instance, under the most liberal variant of the AFTA plan (Scenario 3), expenditures expand by about 2.1 percent in Singapore and substantially less than 1.0 percent in the other ASEAN countries, but under MFN liberalization they expand by 0.2 percent and more than

Table 9—Changes in economywide variables, international trade, and economic welfare under import liberalization scenarios

Import Liberalization Scenario/Country	Economywide Variables			International Trade					Economic Welfare (Real Absorption)
	Expenditures	Wage Rate	Exchange Rate	Trade with the World	Exports		Imports		
					To ASEAN	To Industrial Countries	From ASEAN	From Industrial Countries	
		(percent)			(US\$ million) ^a				(percent)
1. AFTA—selected manufactures									
Indonesia	0.09	0.43	-0.28	130.29	102.01	26.80	134.12	-3.33	0.13
Malaysia	0.66	1.78	-0.39	213.06	239.13	-20.90	396.27	-144.61	0.78
Philippines	0.14	0.32	-0.47	69.91	55.62	13.95	103.25	-19.95	0.18
Singapore	0.96	2.09	1.34	426.64	594.97	-96.68	179.03	179.65	1.69
Thailand	0.14	1.11	-0.30	112.04	95.77	12.24	274.84	-118.63	0.20
ASEAN ^b	...	...	...	951.94	1,087.51	-64.58	1,087.51	-106.87	...
	...	...	...	(0.89)	(7.26)	(-0.11)	(7.26)	(-0.19)	...
2. AFTA—all manufactures									
Indonesia	0.20	0.97	-0.83	212.94	127.48	76.55	222.77	-8.35	0.21
Malaysia	0.79	2.19	-0.39	273.01	314.88	-33.13	508.07	-180.76	0.97
Philippines	0.16	0.83	0.14	104.31	113.27	-6.27	140.70	-21.47	0.32
Singapore	1.56	2.82	2.43	679.57	1,002.45	-207.36	226.34	330.52	2.85
Thailand	0.33	0.93	-1.21	189.16	128.88	48.91	589.08	-306.42	0.36
ASEAN ^b	...	...	...	1,458.99	1,686.96	-121.30	1,686.96	186.47	...
	...	...	...	(1.36)	(11.25)	(-0.20)	(11.25)	(-0.33)	...
3. AFTA—all goods									
Indonesia	0.21	1.26	-0.79	341.71	257.19	77.16	351.36	-8.15	0.23
Malaysia	0.76	3.07	0.49	535.82	715.80	-134.58	752.83	-167.02	1.30
Philippines	0.32	0.96	-1.15	170.57	127.62	36.75	261.75	-42.60	0.41
Singapore	2.09	6.32	3.18	992.64	1,520.19	-314.36	418.16	377.52	3.86
Thailand	0.62	4.16	-1.96	405.35	274.09	106.28	1,110.79	-393.38	0.56
ASEAN ^b	...	...	...	2,446.09	2,894.89	-228.75	2,894.89	-233.63	...
	...	...	...	(2.29)	(19.31)	(-0.39)	(19.31)	(-0.41)	...

(continued)

Table 9—Continued

Import Liberalization Scenario/Country	International Trade								Economic Welfare (Real Absorption) (percent)
	Economywide Variables			Trade with the World	Exports		Imports		
	Expenditures	Wage Rate	Exchange Rate		To ASEAN	To Industrial Countries	From ASEAN	From Industrial Countries	
	(percent)				(US\$ million) ^a				
4. MFN—all goods									
Indonesia	3.77	22.91	-23.22	3,102.22	212.79	2,484.29	287.91	2,004.45	2.35
Malaysia	5.79	22.39	-11.85	1,263.46	528.86	585.82	437.70	554.51	4.87
Philippines	4.83	4.58	-34.73	1,437.61	96.46	1,201.26	141.53	729.59	4.58
Singapore	0.24	7.10	-6.74	685.72	550.58	59.48	539.72	185.90	-2.05
Thailand	5.62	13.59	-26.75	2,572.19	343.58	1,836.30	325.40	1,374.39	4.36
ASEAN ^b	...	...	...	9,061.20	1,732.27	6,167.15	1,732.27	4,848.84	...
	...	...	...	(8.47)	(11.56)	(10.38)	(11.56)	(8.56)	...

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the volume of administered imports by 25 percent, on a preferential basis (AFTA plan) and, alternatively, on a most-favored-nation basis (MFN liberalization).

Note: Leaders (...) indicate not applicable.

^aPer year, measured in 1988 U.S. dollars.

^bValues in parentheses are percentage changes in ASEAN trade relative to baseline in 1988 trade levels. The percentage changes in ASEAN trade with the world are average changes of ASEAN exports and imports with the world.

3.8 percent respectively.⁴⁶ Moreover, the exchange rate of Singapore appreciates under the three AFTA scenarios (3.2 percent in Scenario 3), whereas the exchange rates of the other ASEAN countries tend to depreciate. Finally, under the MFN scenario the exchange rate falls in each ASEAN country, but the magnitude of the decline is substantially less in the case of Singapore (6.7 percent) than the other four countries (for example, 23.2 percent for Indonesia).

These results reflect the greater initial openness of the Singapore economy, coupled with the need for each ASEAN country to maintain its balance of payments under each scenario, principally through adjustment of the exchange rate. Under the AFTA scenarios, increased demand for imports on a preferential basis arises mainly in the four natural resource-abundant ASEAN countries, where the exchange rate thus falls to expand exports sufficiently to finance the greater volume of imports. In Singapore, the AFTA scenarios imply greater initial demand for the country's exports than for imports, and so the exchange rate must appreciate to maintain the country's balance of international payments.

Under the MFN scenario, the ASEAN countries meet their increased demands for imports from countries outside of Southeast Asia as well as from other ASEAN countries. As a consequence, the four natural resource-abundant ASEAN countries and Singapore itself sharply expand their imports from their trading partners outside of the ASEAN region. Singapore is no longer the natural beneficiary of the expansion of import demands by other ASEAN countries. Given its relatively liberal initial trade regime, it experiences comparatively smaller gains in expenditures and wages than its ASEAN partners, and even faces the necessity of adjusting to a lower exchange rate, owing to increased demand for some still-controlled imports of agricultural and industrial products.

As for international trade, the maintenance of external equilibrium under each simulation scenario ensures that total exports increase by the same amount as total imports for each ASEAN country. Import liberalization under the AFTA plan stimulates an expansion of total ASEAN exports of between about US\$1.0 billion (Scenario 1) and US\$2.4 billion (Scenario 3). The simulation results indicate, however, that MFN-based import liberalization results in an expansion of total ASEAN exports that is more than three times larger than under the most expansionary variant of the AFTA plan, about US\$9.1 billion (Scenario 4). Relative to baseline 1988 levels of trade, ASEAN trade with the world rises by 8.5 percent under MFN liberalization and between 0.9 percent and 2.3 percent under the AFTA plan.

Although the expansion of ASEAN trade is generally greater when the liberalization of imports occurs on a nondiscriminatory basis, this generalization does not apply to Singapore. In both Scenarios 2 and 3, the expansion of Singapore's trade under the AFTA plan is greater than, or nearly equivalent to, that under the MFN liberalization scenario. Singapore is the principal beneficiary of the trade diversion effects of the AFTA arrangements because it competes most directly with the major industrial countries in providing exports of manufactures to the four lower-income

⁴⁶Similar results are apparent for the adjustment of the wage rate across the five ASEAN countries. For the Philippines, however, the simulated changes in the wage rate appear to be lower than for the other three natural resource-based countries, perhaps reflecting inadequacies in the base-period trade or interindustry data. It is also notable, particularly in the results for MFN liberalization, that the comparatively lower adjustment of wages for the Philippines is matched by a comparatively greater depreciation of the exchange rate.

ASEAN countries.⁴⁷ When preferences extended to Singapore's exporters under the AFTA plan are removed under the MFN scenario, the expansion of Singapore's trade falls substantially, from US\$1.0 billion (Scenario 3) to US\$0.7 billion (Scenario 4). In fact, under MFN liberalization it is lower than the expansion of trade found for the other ASEAN countries, which ranges from US\$1.2 billion (Malaysia) to US\$3.1 billion (Indonesia).

In Vinerian terms, the estimation results indicate that the AFTA plan is trade creating on a net basis. That is, the expansion of intrabloc exports and imports is not accompanied by substantial diversion of trade away from countries outside of the ASEAN preferential trading system. The diversion of ASEAN trade occurs mainly for trade with the major industrial countries. In value terms, the diversion of ASEAN imports from these countries ranges from US\$107 million (Scenario 1) to US\$234 million (Scenario 3), while the expansion of intra-ASEAN trade ranges from US\$1.1 billion (Scenario 1) to US\$2.9 billion (Scenario 3). If these trade creation and diversion effects are expressed in proportional terms—that is, relative to the baseline 1988 trade levels—the former outweigh the latter trade effects by equally impressive margins, as seen in Table 9.

Aspects of the trade diversion effects among the ASEAN countries are interesting to note. Under the AFTA scenarios, Singapore and Malaysia reduce their exports to the industrial countries appreciably. The other ASEAN countries, however, actually increase their exports to the industrial countries, as their competitiveness in world markets increases to finance greater imports under both the AFTA and MFN import liberalization scenarios. The four natural resource-abundant ASEAN countries reduce their imports, while Singapore increases its imports, from the major industrial countries under the AFTA scenarios. The singularity of the results for Singapore's trade with the industrial countries again stems from the initial openness of the country's trade regime. The AFTA plan implies little increase in Singapore's demand for imports from the four other ASEAN countries. In these four countries, however, the new trading preferences give rise to increased demand for products from Singapore, resulting in the diversion to the ASEAN countries of Singapore's exports that were formerly destined for Europe, Japan, or the United States. Finally, the increase in ASEAN demand for exports from Singapore provides the financing to meet the country's increased demand for imports from outside of Southeast Asia.

Although the simulation results indicate that the AFTA plan is trade creating, application of the same Vinerian concepts to the simulation results for the MFN scenario finds that nondiscriminatory liberalization is more trade creating by a substantial margin. The expansion of intra-ASEAN trade under Scenario 4 (US\$1.7 billion) is about one-third less than that found under Scenario 3 (US\$2.9 billion), but it is larger than or equal to that under either of the two other variants of the AFTA plan, Scenario 1 (US\$1.1 billion) or Scenario 2 (US\$1.7 billion). Moreover, the expansion of trade with countries outside of Southeast Asia under the MFN scenario more than compensates for any "shortfall" in the expansion of intrabloc trade. Indeed, as noted previously, the total expansion of ASEAN trade under the MFN scenario is more than three times greater than under the most liberal variant of the AFTA plan.

⁴⁷In addition to the major industrial countries, Singapore also competes with the other newly industrialized countries in East Asia—namely, Hong Kong, the Republic of Korea, and Taiwan. For an analysis of the effects of the AFTA plan on ASEAN trade with these and other developing countries in Asia, see DeRosa 1995.

Finally, Table 9 considers the effects of trade liberalization on economic welfare. It reveals that under the AFTA scenarios increases in real absorption are generally less than 0.5 percent for the three lower-income and more highly protected ASEAN countries: Indonesia, the Philippines, and Thailand. Such small gains in economic welfare are not uncommon in the results of comparative static exercises (for example, Harberger 1954) and those involving Armington-type models of international trade (Brown 1987; Buehrer and Devarajan 1993). At the same time, however, Malaysia and especially Singapore are found to garner appreciable economic gains; under the most expansionary variant of the AFTA Plan (Scenario 3), real absorption increases by 1.3 percent in Malaysia and 3.9 percent in Singapore. These results follow from the economywide and trade diversion effects noted previously. As more open economies that produce goods more competitive with those exported by the major industrial countries, Singapore and to a lesser extent Malaysia become the primary beneficiaries of preferential trade liberalization among the ASEAN countries when import barriers are lowered in the three highly protected members of the trading bloc (giving rise to trade creation) and trade is diverted away from the major sources of ASEAN imports (owing to the preferential trade liberalization).

Under MFN liberalization (Scenario 4), the increases in economic welfare for the natural resource-abundant ASEAN countries, including Malaysia, are substantial in absolute terms as well as relative to the changes resulting from the AFTA scenarios. In Indonesia, real absorption increases by 2.3 percent and in the other three countries by more than 4.0 percent. Interestingly, Singapore is found to lose under MFN liberalization, with real absorption estimated to fall by 2.1 percent. No longer the primary beneficiary of preferential trade liberalization, Singapore is faced with greater competition for its intraregional exports under the MFN scenario, and in fact the country must adjust to a lower exchange rate to maintain balance of payments equilibrium in response to the greater competition facing its exports and the need to reduce its own relatively modest barriers to imports.

For the four lower-income ASEAN countries, the simulation results point to the vast superiority of nondiscriminatory trade liberalization over the AFTA plan, at least within the normative terms of the estimates provided by the ASEAN trade simulation model. For Singapore, the results are more problematic, perhaps indicating that Singapore's interest ultimately lies in greater multilateral trade liberalization by its trading partners outside of, as well as within, Southeast Asia.

Sensitivity Analysis. How sensitive are the economywide, trade, and other effects just reviewed to alternative assumptions regarding the values for two important sets of parameters in the ASEAN trade simulation model: (1) the elasticities of substitution in consumption between geographically differentiated products and (2) the assumed degree of restrictiveness of nontariff barriers in the ASEAN countries?⁴⁸

⁴⁸This study does not analyze the sensitivity of the simulation results to alternative assumptions regarding the magnitude of the supply-side elasticity parameters in the ASEAN trade simulation model, which govern the substitutability of capital and labor for one another in the production of value-added by sector. Though no more certainty surrounds the middle values of these parameters than the demand and nontariff barrier parameters highlighted in the sensitivity analysis, the supply-side elasticity parameters impinge less directly upon the trade and exchange rate relationships that are central to economic adjustment under the AFTA and MFN trade liberalization scenarios in the simulation model.

For the demand-side elasticity parameters, low and high values are assumed as alternatives to the middle values assumed in the model and given in Table 8. The low values are set at one-half the magnitude of the middle values, while the high values are set symmetrically at one-and-a-half times the middle values.

The results of this first sensitivity exercise appear in Table 10. It is evident that the values specified for the demand elasticity parameters significantly influence the adjustment of exchange rates under the alternative trade liberalization scenarios. The greater the degree of substitutability in consumption of differentiated products in the simulation model, the smaller the magnitude of the exchange rate adjustments associated with import liberalization. Especially under the MFN liberalization scenario, the exchange rate adjustments for individual countries can be very large when the low values of the demand elasticity parameters are specified (for example, -79 percent for the Philippines) and comparatively small when the high values of the parameters are specified (-24 percent for the Philippines).

As should be expected, the adjustment of trade in response to the alternative values for the demand elasticity parameters is the reverse of the adjustment of exchange rates. That is, the adjustment of exports (and imports) becomes larger as the price-responsiveness of bilateral demand for traded goods is increased in the simulation model. Thus, for instance, under Scenario 3 the expansion of total ASEAN exports increases from US\$2.2 billion when the low values of the elasticity parameters are assumed to US\$2.8 billion when the high values are assumed.

Though not reported in Table 10, the alternative values for the substitution elasticities also significantly influence the extent of trade diversion under the variants of the AFTA plan, as measured by changes in ASEAN imports from the major industrial countries. For instance, under the most liberal variant of the plan (Scenario 3), whereas the four natural resource-abundant ASEAN countries reduce their combined imports from the major industrial countries by US\$611 million when the middle values of the demand elasticity parameters are assumed (Table 9), they reduce the same imports by US\$237 million when the low values are assumed and by US\$982 million when the high values are assumed. Reflecting the appreciation of its exchange rate under either of the alternative sets of demand elasticity values, Singapore continues to expand its imports from countries outside of Southeast Asia, by US\$370 million and US\$413 million respectively. Thus, total imports from the major industrial countries by the ASEAN bloc actually increase when the low values of the demand elasticity parameters are specified (US\$133 million), but fall substantially when the high values are specified (-US\$569 million).⁴⁹

The results for economic welfare are the most complicated, mainly as a consequence of the more indirect links between values of the demand elasticity parameters and changes in real absorption in the simulation model. They are also complicated in part by the circumstances surrounding the individual countries and different trade liberalization scenarios. By comparison with their implications for changes in exchange rates and trade, however, the alternative sets of demand elasticity values imply small differences in the simulated changes in economic welfare, especially for Indonesia and the Philippines. Additionally, scrutiny of the simulation results in

⁴⁹In proportional terms, the expansion of total ASEAN trade with the major industrial countries under Scenario 3 amounts to an increase of 0.2 percent when the low values of the demand elasticity parameters are assumed and a decrease of 1.0 percent when the high values are assumed.

Table 10—Changes in selected variables under alternative assumptions about values of elasticities of substitution in consumption

Import Liberalization Scenario/Country	Low Values of Elasticity of Substitution in Consumption			Middle Values of Elasticity of Substitution in Consumption			High Values of Elasticity of Substitution in Consumption		
	Exchange Rate	Exports (Imports)	Economic Welfare	Exchange Rate	Exports (Imports)	Economic Welfare	Exchange Rate	Exports (Imports)	Economic Welfare
	(percent)	(US\$ million) ^a	(percent)	(percent)	(US\$ million) ^a	(percent)	(percent)	(US\$ million) ^a	(percent)
1. AFTA—selected manufactures									
Indonesia	-1.75	124	0.12	-0.28	130	0.13	0.05	133	0.15
Malaysia	0.03	199	0.91	-0.39	213	0.78	-0.49	246	0.74
Philippines	-1.35	45	0.19	-0.47	70	0.18	-0.21	88	0.19
Singapore	1.26	398	1.84	1.34	427	1.69	1.38	468	1.66
Thailand	-0.46	71	0.16	-0.30	112	0.20	-0.25	145	0.21
ASEAN ^b	...	838	...	...	952	...	...	1,080	...
	...	(0.73)	...	...	(0.89)	...	...	(1.01)	...
2. AFTA—all manufactures									
Indonesia	-3.50	203	0.24	-0.83	213	0.21	-0.30	217	0.22
Malaysia	0.27	264	1.16	-0.39	273	0.97	-0.53	313	0.93
Philippines	-0.60	79	0.33	0.14	104	0.32	0.39	124	0.31
Singapore	2.67	660	3.29	2.43	680	2.85	2.38	736	2.73
Thailand	-1.76	104	0.25	-1.21	189	0.36	-1.04	244	0.39
ASEAN ^b	...	1,309	...	...	1,459	...	...	1,634	...
	...	(1.22)	...	...	(1.36)	...	...	(1.53)	...
3. AFTA—all goods									
Indonesia	-4.76	329	0.24	-0.79	342	0.23	0.06	346	0.26
Malaysia	2.30	510	1.72	0.49	536	1.30	0.10	639	1.22
Philippines	-3.53	111	0.43	-1.15	171	0.41	-0.44	212	0.42
Singapore	3.62	982	4.64	3.18	993	3.86	3.07	1,076	3.62
Thailand	-2.68	222	0.42	-1.96	405	0.56	-1.66	555	0.63
ASEAN ^b	...	2,154	...	...	2,446	...	...	2,829	...
	...	(2.01)	...	...	(2.29)	...	...	(2.64)	...

(continued)

Table 10—Continued

Import Liberalization Scenario/Country	Low Values of Elasticity of Substitution in Consumption			Middle Values of Elasticity of Substitution in Consumption			High Values of Elasticity of Substitution in Consumption		
	Exchange Rate	Exports (Imports)	Economic Welfare	Exchange Rate	Exports (Imports)	Economic Welfare	Exchange Rate	Exports (Imports)	Economic Welfare
	(percent)	(US\$ million) ^a	(percent)	(percent)	(US\$ million) ^a	(percent)	(percent)	(US\$ million) ^a	(percent)
4. MFN—all goods									
Indonesia	-73.42	2,852	2.85	-23.22	3,102	2.33	-14.47	3,167	2.23
Malaysia	-18.69	377	3.95	-11.85	1,263	4.87	-10.30	1,804	5.11
Philippines	-79.06	597	4.74	-34.74	1,438	4.58	-24.03	1,899	4.47
Singapore	-9.77	221	-1.85	-6.74	686	-2.05	-6.00	835	-2.34
Thailand	-38.15	491	2.11	-26.75	2,572	4.36	-22.87	3,984	5.21
ASEAN ^b	...	4,537	...	...	9,061	...	...	11,690	...
	...	(4.24)	...	...	(8.47)	...	...	(10.93)	...

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the volume of administered imports by 25 percent on a preferential basis (AFTA plan) and, alternatively, on a most-favored-nation basis (MFN liberalization).

Notes: Low elasticity values are 0.5 times the middle elasticity values indicated in Table 8, and high values are 1.5 times the middle values. Leaders (. . .) indicate not applicable.

^aPer year, measured in 1988 U.S. dollars.

^bValues in parentheses are percentage changes in ASEAN trade relative to baseline 1988 levels of trade.

Table 10 (and more extensive results not reported) reveals that the changes in economic welfare under the different demand elasticity assumptions are not predictably related to the expansion of total trade (net trade creation) or the extent of trade diversion discussed previously. This discrepancy further illustrates the importance of the Hicksian approach to gauging the benefits of preferential versus nondiscriminatory trade liberalization underlying the present study. Most important, the simulated improvements in economic welfare assuming either the low or high values for the demand elasticity parameters continue to be substantially smaller under the AFTA plan than under MFN trade liberalization for the four natural resource-abundant ASEAN countries, and just the reverse for Singapore.

The second sensitivity exercise concerns the restrictiveness of nontariff barriers in the ASEAN trade simulation model. The simulation results in Table 9 assume a value of 25 percent for the increase in the volume of administered imports accompanying the liberalization of intra-ASEAN trade (Scenarios 1 through 3) and ASEAN multilateral trade (Scenario 4). This is among the most problematic parameter values underlying the quantitative analysis of the AFTA plan. To investigate whether alternative values might imply substantially different results, the simulation model was solved for two additional values—10 percent and 40 percent—corresponding to lower-bound and upper-bound values, respectively, of the nontariff barrier parameter.⁵⁰

Table 11 presents simulation results for the exchange rate, total exports (and imports), and economic welfare. The magnitude of the adjustment of the economy-wide and trade variables is generally greater, the greater is the assumed degree of restrictiveness of nontariff barriers in the five ASEAN countries. For instance, the expansion of total ASEAN exports under the most liberal variant of the AFTA plan (Scenario 3) is US\$2.9 billion when the upper-bound value of the administered protection parameter is assumed, compared with US\$2.0 billion when the lower-bound value of the parameter is assumed.

This second sensitivity exercise reveals that complex relationships underlie differences in the adjustment of the exchange rate as well as economic welfare when alternative values of the administered protection parameter are specified. For instance, again under Scenario 3, the simulation results show that when the lower-bound value of the parameter is assumed, the exchange rate in the two ASEAN countries most protected by nontariff barriers, Indonesia and the Philippines, appreciates and the improvement in economic welfare in both countries is equal to or even greater than that found when the middle and upper-bound values of the parameter are assumed. For both countries, the specification of the lower degree of restrictiveness of nontariff barriers amounts to assuming that the countries are relatively open trading economies, not unlike Singapore, with the result that the profile of adjustment of the exchange rate and economic welfare begins to resemble that of the city-state. Specifically, the two low-income ASEAN countries become greater beneficiaries of intra-ASEAN preferences and trade diversion under the AFTA plan, culminating in

⁵⁰Whereas the middle value (25 percent) of the administered protection parameter implies that imports covered by nontariff barriers are restricted initially to levels corresponding to 80 percent of their free trade equilibrium levels, the lower-bound and upper-bound values of the parameter imply that administered imports are restricted initially to levels corresponding to 91 percent and 71 percent, respectively, of their free trade equilibrium levels.

Table 11—Changes in selected variables under alternative assumptions about the restrictiveness of nontariff barriers

Import Liberalization Scenario/Country	10 Percent Increase in Administered Imports			25 Percent Increase in Administered Imports			40 Percent Increase in Administered Imports		
	Exchange Rate	Exports (Imports)	Economic Welfare	Exchange Rate	Exports (Imports)	Economic Welfare	Exchange Rate	Exports (Imports)	Economic Welfare
	(percent)	(US\$ million) ^a	(percent)	(percent)	(US\$ million) ^a	(percent)	(percent)	US\$ million) ^a	(percent)
1. AFTA—selected manufactures									
Indonesia	0.27	61	0.16	-0.28	130	0.13	-0.83	200	0.10
Malaysia	-0.59	173	0.70	-0.39	213	0.78	-0.19	253	0.86
Philippines	-0.04	53	0.17	-0.47	70	0.18	-0.91	86	0.19
Singapore	1.62	367	1.81	1.34	427	1.69	1.05	486	1.56
Thailand	-0.29	102	0.19	-0.30	112	0.20	-0.32	122	0.20
ASEAN ^b	...	756	...	...	952	...	...	1,148	...
	...	(0.71)	...	...	(0.89)	...	...	(1.07)	...
2. AFTA—all manufactures									
Indonesia	0.11	98	0.23	-0.83	213	0.21	-1.78	328	0.20
Malaysia	-0.63	225	0.88	-0.39	273	0.97	-0.15	321	1.06
Philippines	0.77	81	0.29	0.14	104	0.32	-0.50	127	0.34
Singapore	2.61	589	2.86	2.43	680	2.85	2.25	770	2.85
Thailand	-1.16	174	0.35	-1.21	189	0.36	-1.26	204	0.36
ASEAN ^b	...	1,167	...	...	1,459	...	...	1,751	...
	...	(1.09)	...	...	(1.36)	...	...	(1.64)	...
3. AFTA—all goods									
Indonesia	0.71	156	0.29	-0.79	342	0.23	-2.30	527	0.17
Malaysia	-0.01	454	1.16	0.49	536	1.30	0.99	618	1.44
Philippines	0.16	130	0.41	-1.15	171	0.41	-2.47	211	0.42
Singapore	3.75	847	4.03	3.18	993	3.86	2.61	1,138	3.69
Thailand	-1.88	367	0.56	-1.96	405	0.56	-2.05	444	0.56
ASEAN ^b	...	1,954	...	...	2,446	...	...	2,938	...
	...	(1.83)	...	...	(2.29)	...	...	(2.75)	...

(continued)

Table 11—Continued

Import Liberalization Scenario/Country	10 Percent Increase in Administered Imports			25 Percent Increase in Administered Imports			40 Percent Increase in Administered Imports		
	Exchange Rate	Exports (Imports)	Economic Welfare	Exchange Rate	Exports (Imports)	Economic Welfare	Exchange Rate	Exports (Imports)	Economic Welfare
	(percent)	(US\$ million) ^a	(percent)	(percent)	(US\$ million) ^a	(percent)	(percent)	(US\$ million) ^a	(percent)
4. MFN—all goods									
Indonesia	-7.68	1,299	2.59	-23.22	3,102	2.33	-38.77	4,906	2.08
Malaysia	-11.08	1,162	4.78	-11.85	1,263	4.87	-12.62	1,365	4.95
Philippines	-18.81	1,037	4.11	-34.74	1,438	4.58	-50.65	1,838	5.05
Singapore	-1.95	431	1.00	-6.74	686	-2.05	-11.53	941	-5.11
Thailand	-24.72	2,438	4.54	-26.75	2,572	4.36	-28.78	2,706	4.18
ASEAN ^b	...	6,367	...	...	9,061	...	...	11,756	...
	...	(5.95)	...	...	(8.47)	...	...	(10.99)	...

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the volume of administered imports by 10 percent, 25 percent, and 40 percent on a preferential basis (AFTA plan) and, alternatively, on a most-favored-nation basis (MFN liberalization).

Note: Leaders (...) indicate not applicable.

^aPer year, measured in 1988 U.S. dollars.

^bValues in parentheses are percentage changes in ASEAN trade relative to baseline 1988 levels of trade.

an appreciation of the exchange rate and somewhat greater improvement in economic welfare than otherwise under the plan.

In sum, the sensitivity analysis presented here illustrates that different assumptions about the price-responsiveness of demand as well as the restrictiveness of administered protection measures in the ASEAN countries can significantly influence the broad effects of trade liberalization found by the ASEAN trade simulation model. The analysis, however, reveals no special or extraordinary biases arising from assuming the central values of the model's parameters that could not be foretold by the basic specifications of the model or its linearity with respect to proportionate changes in tariff and nontariff barriers. Thus, although more informed judgments might be beneficially brought to bear in the selection of appropriate parameter values for the simulation model, this chapter will continue to emphasize the AFTA and MFN scenario results assuming the middle values of the model's substitution elasticity and administered protection parameters.

Sectoral Effects

The complexity of the ASEAN trade simulation model becomes evident when one examines the sectoral details of the simulation results, particularly the results found for the adjustment of the prices governing production and consumption in each country. Of primary interest here are the implications of the AFTA plan for production, consumption, and trade in the ASEAN countries by three broad sectors: agriculture, primary commodities, and manufacturing. For these three sectors in each country, Tables 12 and 13 report changes in prices and quantities corresponding to traded goods production and consumption (Table 12) and to the export and import trade of the ASEAN countries with the world, one another, and the major industrial countries (Table 13).

The process of economic development is frequently evaluated in terms of increasing industrial capacity and accumulation of physical capital, because these factors are widely believed to raise employment and wealth in developing countries. This process tends to be more efficient, however, when it occurs within the bounds of each country's comparative advantage, including in agriculture. In the case of the four natural resource-abundant ASEAN countries, agriculture and other primary commodity sectors still contribute significantly to exports, output and employment, and the process of economic growth. Thus, the outcome of the simulation results for these sectors, as well as the manufacturing sector, is important.⁵¹

Table 12 indicates that under the four trade liberalization scenarios considered, prices of agricultural and other primary commodities (relative to the price of non-traded goods) rise in connection with both domestic production and consumption, except for Singapore, where they fall under the three AFTA scenarios. Also, the largest relative price changes occur under the MFN scenario (Scenario 4). The implications of these results for resource allocation are difficult to interpret, because the changes in prices of domestic output refer to gross rather than net (value-added)

⁵¹On the importance of agriculture and the rural sector for economic growth in more-developed as well as less-developed countries that are relatively abundant in arable land and other natural resources, see, for instance, Timmer 1988; Bautista and Valdés 1993; and Ranis and Stewart 1993.

Table 12—Changes in prices and quantities of primary commodities and manufactures by import liberalization scenario

Country/Goods Category	Production				Consumption			
	Scenario 1 (AFTA)	Scenario 2 (AFTA)	Scenario 3 (AFTA)	Scenario 4 (MFN)	Scenario 1 (AFTA)	Scenario 2 (AFTA)	Scenario 3 (AFTA)	Scenario 4 (MFN)
	(percent)							
Indonesia								
Prices								
Primary commodities	0.10	0.40	0.45	11.49	-0.06	0.19	0.18	7.98
Agriculture	0.04	0.29	0.37	9.02	-0.07	0.17	0.18	7.63
Manufactures	0.52	0.94	0.91	12.58	-0.21	-0.93	-0.93	-15.66
Quantities								
Primary commodities	0.06	0.17	0.20	4.52	-0.00	-0.12	-0.20	-4.35
Agriculture	0.03	0.09	0.13	2.34	0.00	-0.11	-0.23	-4.07
Manufactures	0.28	0.42	0.39	4.36	0.20	0.91	0.92	15.45
Malaysia								
Prices								
Primary commodities	0.47	0.50	0.28	8.85	0.44	0.46	-0.46	6.39
Agriculture	0.51	0.56	0.26	8.86	0.44	0.47	-0.52	5.99
Manufactures	0.60	0.74	0.04	7.69	-0.86	-1.17	-1.97	-1.29
Quantities								
Primary commodities	0.13	0.14	0.18	3.15	0.21	0.31	1.20	-0.66
Agriculture	0.13	0.14	0.15	2.75	0.20	0.30	1.27	-0.27
Manufactures	0.55	0.70	0.45	3.67	1.48	1.90	2.68	6.74
Philippines								
Prices								
Primary commodities	0.31	-0.12	0.45	20.71	0.17	-0.20	-0.08	9.29
Agriculture	0.27	-0.13	0.56	19.60	0.16	-0.21	0.08	10.05
Manufactures	0.31	0.13	1.19	22.21	-0.68	-1.54	-0.95	-8.85
Quantities								
Primary commodities	0.12	-0.06	0.27	9.62	-0.08	0.26	-0.04	-10.51
Agriculture	0.10	-0.09	0.17	8.73	-0.08	0.26	-0.22	-11.49
Manufactures	0.39	0.57	0.92	11.59	0.46	1.16	0.67	5.32

(continued)

Table 12—Continued

Country/Goods Category	Production				Consumption			
	Scenario 1 (AFTA)	Scenario 2 (AFTA)	Scenario 3 (AFTA)	Scenario 4 (MFN)	Scenario 1 (AFTA)	Scenario 2 (AFTA)	Scenario 3 (AFTA)	Scenario 4 (MFN)
	(percent)							
Singapore								
Prices								
Primary commodities	-1.07	-2.02	-1.26	5.88	-1.07	-1.98	-2.98	3.01
Agriculture	-0.95	-1.88	-1.93	5.57	-1.03	-1.91	-2.98	2.66
Manufactures	-0.50	-1.00	-1.64	6.36	-1.28	-2.21	-2.88	4.18
Quantities								
Primary commodities	-0.36	-0.64	0.12	2.13	1.90	3.32	5.79	-0.74
Agriculture	-0.21	-0.40	-0.25	1.51	1.83	3.20	5.92	-0.01
Manufactures	0.43	0.64	0.45	1.23	2.26	3.76	4.92	-3.07
Thailand								
Prices								
Primary commodities	0.20	0.89	1.05	15.15	0.17	0.86	0.40	9.24
Agriculture	0.20	0.87	1.31	15.39	0.17	0.85	0.57	9.32
Manufactures	0.20	0.85	1.33	12.99	-0.35	-0.58	0.07	1.00
Quantities								
Primary commodities	0.19	0.41	0.48	5.88	-0.06	-0.54	-0.25	-7.39
Agriculture	0.19	0.41	0.57	5.84	-0.05	-0.53	-0.43	-7.58
Manufactures	0.26	0.54	0.80	7.24	0.43	0.79	0.42	3.09

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the volume of administered imports by 25 percent on a preferential basis (AFTA plan) and alternatively, on a most-favored-nation basis (MFN liberalization).

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes using base period levels of production and consumption as weights.

Table 13—Changes in trade of primary commodities and manufactures by import liberalization scenario

Country/Goods Category/ Trading Partner	Exports				Imports			
	Scenario 1 (AFTA)	Scenario 2 (AFTA)	Scenario 3 (AFTA)	Scenario 4 (MFN)	Scenario 1 (AFTA)	Scenario 2 (AFTA)	Scenario 3 (AFTA)	Scenario 4 (MFN)
	(US\$ million) ^a							
Indonesia								
Primary commodities								
World	52	106	236	2,625	32	32	160	785
ASEAN	14	16	146	138	32	33	161	135
Industrial countries	33	79	80	2,164	-0	-0	-0	315
Agriculture								
World	38	64	147	1,279	32	31	57	402
ASEAN	14	15	108	119	32	32	58	45
Industrial countries	21	41	33	975	-0	-0	-0	202
Manufactures								
World	78	107	106	477	98	181	182	2,317
ASEAN	88	112	112	75	102	190	191	153
Industrial countries	-6	-2	-3	320	-3	-8	-8	1,690
Malaysia								
Primary commodities								
World	44	48	323	786	20	23	252	455
ASEAN	54	67	468	319	14	15	256	250
Industrial countries	-8	-14	-106	359	3	5	-6	116
Agriculture								
World	41	47	181	475	22	26	138	321
ASEAN	52	64	271	174	17	20	147	175
Industrial countries	-9	-13	-63	234	3	3	-6	86
Manufactures								
World	169	225	213	477	193	250	284	809
ASEAN	185	248	247	210	382	493	497	187
Industrial countries	-13	-19	-29	227	-148	-186	-161	438

(continued)

Table 13—Continued

Country/Goods Category/ Trading Partner	Exports				Imports			
	Scenario 1 (AFTA)	Scenario 2 (AFTA)	Scenario 3 (AFTA)	Scenario 4 (MFN)	Scenario 1 (AFTA)	Scenario 2 (AFTA)	Scenario 3 (AFTA)	Scenario 4 (MFN)
	(US\$ million) ^a							
Philippines								
Primary commodities								
World	12	1	57	881	9	15	90	609
ASEAN	1	1	15	24	12	12	134	76
Industrial countries	10	1	35	750	-1	2	-15	262
Agriculture								
World	11	2	35	673	9	13	32	288
ASEAN	1	1	8	14	12	12	44	23
Industrial countries	9	1	25	617	-2	1	-8	193
Manufactures								
World	58	103	114	556	61	89	81	828
ASEAN	54	112	113	72	92	128	128	65
Industrial countries	4	-7	2	451	19	-23	-28	468
Singapore								
Primary commodities								
World	-14	-35	300	302	58	96	369	156
ASEAN	9	5	524	229	28	45	234	261
Industrial countries	-11	-18	-111	18	12	21	43	-35
Agriculture								
World	4	-5	45	113	48	79	232	106
ASEAN	14	14	101	57	25	42	168	160
Industrial countries	-3	-5	-15	12	10	16	29	-23
Manufactures								
World	440	715	693	384	368	584	623	530
ASEAN	586	998	996	321	152	182	184	279
Industrial countries	-86	-189	-203	42	167	310	335	221

(continued)

Table 13—Continued

Country/Goods Category/ Trading Partner	Exports				Imports			
	Scenario 1 (AFTA)	Scenario 2 (AFTA)	Scenario 3 (AFTA)	Scenario 4 (MFN)	Scenario 1 (AFTA)	Scenario 2 (AFTA)	Scenario 3 (AFTA)	Scenario 4 (MFN)
	(US\$ million) ^a							
Thailand								
Primary commodities								
World	17	42	236	1,316	-2	-15	242	947
ASEAN	6	11	153	192	-0	-5	521	180
Industrial countries	10	26	69	981	-1	-6	-65	440
Agriculture								
World	17	41	213	1,225	-2	-12	159	836
ASEAN	6	11	146	182	1	-0	218	142
Industrial countries	10	26	59	929	-2	-7	-29	401
Manufactures								
World	95	147	169	1,256	114	204		
ASEAN	90	118	121	152	275	594	590	146
Industrial countries	2	22	37	355	-117	-301	-329	934
ASEAN								
Primary commodities								
World	112	162	1,152	5,910	118	151	1,114	2,951
ASEAN	85	99	1,305	902	85	99	1,305	902
Industrial countries	35	74	-33	4,272	13	21	-43	1,097
Agriculture								
World	110	148	621	3,765	109	137	619	1,954
ASEAN	87	105	634	546	87	105	634	546
Industrial countries	28	50	39	2,767	9	13	-14	859
Manufactures								
World	840	1,297	1,294	3,151	834	1,308	1,332	6,110
ASEAN	1,003	1,588	1,590	830	1,003	1,588	1,590	830
Industrial countries	-99	-195	-195	1,895	-120	-208	-191	3,751

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the volume of administered imports by 25 percent on a preferential basis (AFTA plan) and, alternatively, on a most-favored-nation basis (MFN liberalization).

^aPer year, measured in 1988 U.S. dollars.

output. Of more certain interpretation in this regard are the results of the simulations for production by sector.⁵²

Generally speaking, the AFTA plan leads to sharper increases in output of manufactures than in output of agricultural or other primary commodities. Remarkably, however, the AFTA plan does not result in substantial expansion of production of manufactures in any ASEAN country, except in a limited number of cases: Malaysia (0.7 percent, Scenario 2), the Philippines (0.9 percent, Scenario 3), and Thailand (0.8 percent, Scenario 3). In most cases, the expansion of manufactures is generally no more than about 0.5 percent, including in the case of Singapore. The expansion of agricultural output in the four natural resource-abundant countries is greater as the commodity coverage of the plan is expanded. It is generally less than 0.2 percent, however, except in the case of Thailand, which achieves increases in agricultural output of 0.4 and 0.6 under the two most liberal variants of the AFTA plan (Scenarios 2 and 3, respectively).

Under MFN liberalization (Scenario 4), import liberalization has pronounced sectoral effects. In the four natural resource-abundant countries agricultural production increases between 2.3 percent (Indonesia) and 8.7 percent (Philippines), and in Singapore it expands by 1.5 percent. In the lower-income ASEAN countries, the production of manufactures expands even more sharply, between 3.7 percent (Malaysia) and 11.6 percent (Philippines). In Singapore, however, the expansion of production of manufactures is somewhat less than that for agriculture, 1.2 percent, reflecting (as discussed previously) the increased competitive environment in Southeast Asia for the country's exports under MFN liberalization. Finally, in the case of Indonesia, the expansion of production of primary commodities in the aggregate (4.5 percent) is marginally greater than for manufactures (4.4 percent), apparently reflecting substantial opportunities for expanded output in Indonesia by natural resource-based sectors in addition to agriculture, especially mineral fuels, under MFN liberalization.

The foregoing results for production support the view that trade policies and practices in low- and middle-income developing countries such as the natural resource-abundant ASEAN countries are biased against agriculture (Krueger, Schiff, and Valdés 1988, 1992; Bautista and Valdés 1993). In the case of Indonesia they also indicate that protection in less-developed countries can repress market incentives for greater production of nonagricultural primary commodities, such as mineral fuels.⁵³ The results for Singapore are more difficult to generalize, given that the country applies some restrictions on imports of agricultural goods not unlike the pattern of high rates of protection for agriculture found in the industrial countries of Western Europe, North America, and East Asia (Petit 1985; Anderson and Hayami 1986). The simulation results indicate that rather than contracting, the modest levels of agricultural production in Singapore might actually expand under MFN liberalization in Southeast Asia, in indirect response to the lower protection for selected industrial

⁵²In the ASEAN trade simulation model, changes in gross output are identical to changes in value-added, because intermediate goods are combined in fixed proportions with the contributions to output of labor and the other primary inputs to production.

⁵³The results for mineral fuels production in Indonesia may be biased, because the ASEAN trade simulation model does not take into account the membership of Indonesia in the Organization of Petroleum Exporting Countries, which attempts to set quantitative ceilings on the output of crude petroleum by its members. In effect, the model assumes that these ceilings are not binding upon Indonesia or are simply not observed by the country.

sectors in Singapore and the general adjustment of industrial production to the heightened competition the country's exporters confront in regional and other markets.

On the consumption side, the "magnification" of price and particularly quantity effects under the MFN scenario (versus under the AFTA plan scenarios) is again apparent. Especially for Indonesia, the Philippines, and Thailand, the reduced consumption of agricultural and other primary commodities and the increased consumption of manufactures is attributable to the liberalization of imports of manufactures, combined with the "demand pull" of increased exports of primary commodities and manufactures necessary to finance the increase of total imports under MFN liberalization. In the case of Singapore, under the MFN scenario the consumption of both primary commodities and manufactures declines, in response to both the higher consumption prices for traded goods and, particularly, the decline in Singapore's hegemony over other developing countries and especially other ASEAN countries in regional markets for its exports.

Finally, based on the sectoral changes in trade flows reported in Table 13, it is apparent that the AFTA plan tends to increase the trade of the ASEAN countries in manufactures more than in primary commodities. Indeed, when trade liberalization is restricted to only manufactures under Scenarios 1 and 2, the expansion of trade in manufactures by the ASEAN countries is several times greater than the expansion of trade in primary commodities. Under the most liberal variant of the AFTA plan (Scenario 3), however, the trade expansion is more balanced between primary commodities and manufactures, owing to the inclusion of the former goods in the product coverage of the import liberalization. Thus, the expansion of intra-ASEAN trade in primary commodities under Scenario 3 (US\$1,305 million) is more than 10 times greater than under Scenario 2 (US\$99 million) and is nearly equivalent in value to the expansion of intrabloc trade in manufactures under the same two scenarios (US\$1,590 million).

Under the MFN liberalization scenario, ASEAN imports of manufactures and primary commodities increase by US\$6.1 billion and US\$3.0 billion respectively. This wide margin between magnitudes of adjustment in imports of manufactures and primary commodities, seen in the simulation results for each ASEAN country, reflects the generally higher rates of protection for manufacturing than for other sectors found in Southeast Asia, as in other developing regions. ASEAN exports of primary commodities and manufactures, on the other hand, show just the opposite pattern of adjustment in the simulation results. Whereas ASEAN exports of manufactures expand by about US\$3.2 billion, ASEAN exports of primary commodities expand by about US\$5.9 billion, with agricultural goods accounting for about US\$3.8 billion of the expansion. These results reflect particularly large increases in exports of primary commodities by Indonesia (US\$2.6 billion) and Thailand (US\$1.3 billion). More generally, they mirror the reduced bias against agriculture and other primary goods sectors, noted in the discussion of the results for production.

Overall, the sectoral aspects of the simulation results indicate that the alternative assumptions of the AFTA and MFN scenarios imply some important qualitative as well as quantitative differences. Perhaps the sharpest qualitative difference concerns the composition of expanded ASEAN production and exports under either preferential or nondiscriminatory trade liberalization. Specifically, as the coverage of import liberalization is widened in the simulations to include primary commodities as well as manufactures, the adjustment of ASEAN exports appears increasingly to follow

the underlying comparative advantage of the ASEAN countries in natural resource-intensive goods and more labor-intensive manufactures.

This result raises again the interesting question posed at the outset of the analysis: does the new ASEAN Free Trade Area contribute appreciably to increasing the integration of the ASEAN countries in the world economy? It also raises questions about the nature of the substantial differences in welfare gains between the AFTA- and MFN-scenario results, noted previously.

Similarity of AFTA to MFN Results

The questions raised by the sectoral results of the simulation are considered here with reference to the computed similarity between the changes in production, consumption, and trade under the three variants of the AFTA plan, compared with the simulated changes in the same variables under the MFN scenario. Specifically, values of a common measure of similarity, the so-called cosine measure of similarity, are computed for the changes in each variable across the 26 traded goods sectors identified in the ASEAN trade simulation model (Table 14). The cosine measure indicates the extent to which the direction of sectoral changes in variables under the variants of the AFTA plan matches the direction of sectoral changes in the same variables under the hypothesized MFN liberalization scenario. The measure can range in value from -1 to 1 , depending upon the acuteness of the angle formed between the AFTA and MFN vectors of sectoral changes in a variable (such as production). The closer the computed value of the measure is to unity, the greater is the underlying similarity of two vectors.⁵⁴

In Table 14, the values of the similarity measure indicate that, broadly speaking, the adjustment of production and exports under the AFTA plan tends to be more consistent with the outcome of MFN liberalization than does the adjustment of consumption and imports, especially imports from the industrial countries. Thus, especially under the variant of the plan for the ASEAN Free Trade Area with the widest coverage of traded goods (Scenario 3), production in the ASEAN countries (except Singapore) tends to adjust in line with international comparative advantage (that is, cosines are greater than 0.5). On the other hand, consumption possibilities in the Philippines, Singapore, and Thailand appear to be unfavorably affected by preferential liberalization. Indeed, under Scenario 3 the changes in consumption in Singapore (with a negative cosine value) and Thailand (with a cosine near 0.2) are substantially different from those simulated under the MFN scenario.

Finally, with regard to the changes in trade, the similarity values for ASEAN trade with the world suggest that if the coverage of the AFTA plan includes agricultural and other primary commodities as well as manufactures, the plan might expand ASEAN exports and imports in directions that are consistent with increasing ASEAN integration in the world economy. Under Scenario 3 the expansion of ASEAN exports to the world and intra-ASEAN trade itself are nearly perfectly conformable (with cosines very close to or greater than 0.9) to that under the MFN liberalization scenario. At the same time, however, the cosine values reported for ASEAN trade

⁵⁴The cosine measure of similarity bears a close resemblance to the familiar correlation coefficient in statistical analysis, which measures the similarity of variations of two variables about their respective means. The two measures are distinct, however, and no formal statistical test is applicable to determining the significance of computed values of the cosine measure. See, for instance, Theil 1971, 9-10.

Table 14—Similarity of AFTA to MFN simulation results

Type of Trade/Country	AFTA Import Liberalization Scenario					
	1	2	3	1	2	3
	(cosine) ^a					
	Production ^b			Consumption ^b		
Indonesia	0.55	0.77	0.78	0.47	0.75	0.73
Malaysia	0.76	0.82	0.77	0.79	0.87	0.83
Philippines	0.60	0.45	0.68	0.22	0.02	0.34
Singapore	0.40	0.37	0.39	-0.38	-0.44	-0.40
Thailand	0.51	0.80	0.81	0.35	0.48	0.21
	Exports			Imports		
World trade						
Indonesia	0.40	0.17	0.89	-0.54	-0.69	0.79
Malaysia	-0.14	-0.14	0.98	-0.68	-0.67	0.91
Philippines	0.03	0.00	0.63	-0.34	-0.21	0.87
Singapore	-0.60	-0.70	0.93	0.68	0.55	0.60
Thailand	0.34	0.37	0.98	-0.26	-0.39	0.65
ASEAN	-0.39	-0.47	0.87	-0.32	-0.28	0.89
Intra-ASEAN trade						
Indonesia	0.52	0.55	0.96	0.61	0.73	1.00
Malaysia	0.54	0.57	0.94	0.54	0.56	0.86
Philippines	0.75	0.87	0.91	0.47	0.51	0.98
Singapore	0.54	0.63	0.98	0.67	0.70	0.92
Thailand	0.44	0.52	0.99	0.29	0.41	0.75
ASEAN	0.52	0.58	0.95	0.52	0.58	0.95
Industrial country trade						
Indonesia	0.76	0.96	0.94	-0.44	-0.64	-0.64
Malaysia	-0.58	-0.75	-0.91	-0.82	-0.84	-0.85
Philippines	0.48	-0.06	0.85	-0.36	-0.33	-0.57
Singapore	-0.66	-0.75	-0.75	0.48	0.26	0.25
Thailand	0.79	0.97	0.89	-0.49	-0.55	-0.62
ASEAN	0.07	0.20	-0.18	-0.38	-0.68	-0.74

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the volume of administered imports by 25 percent, on a preferential basis (AFTA plan) and, alternatively, on a most-favored-nation basis (MFN liberalization).

^aCosine of the angle formed by vectors of simulated changes in the indicated variables across 26 traded goods sectors, under the AFTA plan and MFN import liberalization.

^bQuantities produced or consumed. Consumption refers to final demand.

with the major industrial countries reveal that the AFTA plan implies substantial diversion of ASEAN trade away from the industrial countries. Except in the case of Singapore, the sectoral changes in ASEAN imports from the major industrial countries in particular are sharply skewed away from those that would obtain under MFN liberalization.

The last result indicates that the new ASEAN Free Trade Area should be viewed as effectively targeting imports from the major industrial countries for trade diversion, not only in quantitative terms given by the volume of imports but also in qualitative terms given by the sectoral composition of imports. To the extent that ASEAN gains from trade are mainly associated with consumption of particular commodities and goods produced by countries with substantially different relative endowments of natural and accumulated resources than those found in Southeast Asia, the AFTA plan would appear to impose high economic costs in terms of forgone consumption opportunities on the ASEAN countries themselves. Indeed, this insight supports greater appreciation for, as well as understanding of, the significance of the wide margins by which the improvements in economic welfare in the four natural resource-abundant ASEAN countries under the AFTA plan fall short of those under the MFN scenario (Table 9).

CONCLUSION

Multilateral commitment to liberalizing international trade and advancing economic integration in the world economy has been subject to question during the last decade or more. Indeed, notwithstanding the final conclusion to the Uruguay Round of multilateral trade negotiations, the GATT process of periodic multilateral trade negotiations has arguably faltered amid the declining U.S. hegemony in the world economy, rising protectionist pressures in the Western European countries and Japan as well as the United States, and fundamental changes in global political and security issues since the collapse of communism in the former Soviet Union and Eastern Europe. The weak position of multilateralism has led to a resurgence of interest in regional trading arrangements among groups of countries, often with closely shared political as well as economic objectives. This resurgence is seen prominently in the North American Free Trade Agreement among Canada, Mexico, and the United States and the single-market plan of the European Union. But interest in pursuing regional economic arrangements has also spread to other groups of countries, particularly blocs of developing countries in Asia, Latin America, and Sub-Saharan Africa.

In economic theory, the formation of preferential trading arrangements is unlikely to increase economic welfare significantly if the countries forming the union have similar profiles of natural and other resource endowments. This is especially the case for regional or other groups of developing countries that are marked by little diversity of natural resource endowments, limited development of human resources, and, often in the case of low-income countries, limited division of labor and extent of formal markets. Thus, although regional trade and other economic arrangements might result in some net economic benefits, from a normative perspective the benefits of establishing such arrangements among developing countries should be weighed against the expected benefits of liberalizing trade relations on a nondiscriminatory basis, following the most-favored-nation principle that underlies the neoclassical theory of international trade, the General Agreement on Tariffs and Trade, and also a number of bilateral and regional trading accords established in Europe and the Western Hemisphere beginning in the nineteenth century (Irwin 1993).

Against the background of the robust performance of the ASEAN economies during the last quarter century, the preferential trading arrangements and investment accords among the ASEAN countries have frequently been hailed as examples of successful forms of regional cooperation among developing countries. Therefore, in the midst of the current resurgence of interest in regional economic integration, the past ASEAN economic arrangements and especially the plans for the new ASEAN Free Trade Area are objects of considerable interest to policymakers in many developing regions.

Notwithstanding popular accolades for the ASEAN economic arrangements, economic studies have generally found that, heretofore, the ASEAN preferential trading arrangements have been responsible for only modest gains in trade among the

ASEAN countries. Moreover, the related ASEAN investment programs, including those intended to foster the integral participation of the private sector in promoting the growth of complementary industries in Southeast Asia, have demonstrated little vitality. Thus the economic success of the ASEAN countries is attributable mainly to factors other than cooperative trade and investment policies.

Many economists and other observers contend that "open regionalism" provides a more plausible explanation for the vitality of the ASEAN economies and, more generally, the economies of the other successful developing countries of the Asian Pacific Rim.⁵⁵ That is, combined with the pursuit of relatively stable monetary and fiscal policies, the increasing outward orientation of the economic relations of the ASEAN countries individually with countries outside of, as well as within, Southeast Asia is the prime explanation for their economic success. Moreover, there is little to suggest that the economic cooperation policies pursued jointly by the ASEAN countries have been more outward oriented than the regional economic arrangements pursued by other groups of developing countries. Even in the case of the ASEAN industrial joint venture program, the most recent industrial promotion and investment scheme formulated by the Southeast Asian countries, the clear intention has been to foster sheltered regional markets in order to promote the ASEAN-wide objective of more rapid industrialization. Although this objective has been cloaked in the garb of promoting industrial activities in the evolving comparative advantage of the ASEAN countries, the logic of the scheme is identical to familiar arguments for infant industry protection. This leaves the most egregious rationale for regional trading arrangements, namely, that they are deemed efficient means of pursuing national interests in industrialization and other development goals (Cooper and Massell 1965). Thus, that the ASEAN countries have prospered amid such cooperative policies is attributable to their observing *de facto* as well as formal economic policies advancing open regionalism, before the letter of their regional cooperation pacts.

Given this perspective, it is difficult to understand how regional trading arrangements can be regarded as contributing to wider acceptance of more open, nondiscriminatory, trade policies. Indeed, to date the process of policy-guided regional integration in Southeast Asia is better viewed as competitive with, rather than complementary to, multilateralism and the maintenance of relatively open economic policies in the region. Not only is the process costly in terms of administrative requirements, such as those necessary to enforce ASEAN rules of origin, but it may also inhibit wider acceptance of more liberal trade and investment policies in the region, including the Asia-Pacific Economic Community proposed by the Asia-Pacific Economic Cooperation forum (APEC 1993). By fostering new vested interests in the maintenance of sheltered regional industries, it risks making the interests of ASEAN consumers, and large numbers of ASEAN producers who would be competitive in wider Asia-Pacific or world markets under more liberal economic arrangements, subservient to those of a smaller number of ASEAN producers serving markets that are protected from greater international competition by ASEAN preferential trading arrangements.

⁵⁵See, for instance, Hughes 1991; Drysdale and Garnaut 1993; Panagariya 1993; and World Bank 1993.

The quantitative analysis of the ASEAN Free Trade Area plan conducted here partially contradicts the judgments of earlier studies regarding the limited efficacy of ASEAN preferential trading arrangements in promoting intrabloc trade. Results of the ASEAN trade simulation model find that the AFTA plan is trade creating on a net basis and could expand total intrabloc trade by as much as 19 percent (US\$2.9 billion). In addition, the sectoral expansion of production and exports by the ASEAN countries under the AFTA plan bears close similarity to that expected under MFN liberalization.

Despite these findings, the results of the analysis raise some fundamental concerns about important qualitative as well as quantitative aspects of the expansion of ASEAN trade relations under the AFTA plan. The AFTA plan, for instance, reduces economic disincentives for greater production and trade in agriculture and other primary commodity sectors in the four major natural resource-abundant ASEAN countries (Indonesia, Malaysia, the Philippines, and Thailand), but by margins that are substantially less than under MFN liberalization. More generally, the sectoral adjustment of consumption and imports under the AFTA plan diverges from that under MFN liberalization, owing to the discriminatory nature of the trade liberalization. Overall, the AFTA plan is estimated to yield appreciable but small improvements in ASEAN economic welfare measured in terms of real expenditures on final demand, or real absorption (less than 0.5 percent), except in Singapore and to a lesser extent Malaysia. By virtue of their initially relatively open economies, these two countries stand to gain substantially (greater than 1.0 percent increase in real absorption) from trade diversion as well as fundamental expansion of intrabloc trade under the AFTA plan. Most important, by effectively targeting imports from the major industrial countries for trade diversion, the AFTA plan sacrifices important gains to ASEAN consumers from trade with the principal trading partners of the Southeast Asian countries, imposing economic costs in terms of forgone consumption opportunities mainly on the ASEAN economies themselves.

Although faced with major political obstacles, the alternative policy of liberalizing ASEAN trade relations on a nondiscriminatory basis is estimated by the simulation model to result in significant gains in economic welfare for the natural resource-abundant ASEAN countries, ranging between 2.0 percent and 5.0 percent in terms of real absorption. For Singapore, however, real absorption is estimated to decline by about 2.0 percent. These results occur because under MFN liberalization, the adjustment of consumption and imports, as well as production and exports, in the lower-income ASEAN countries is more complementary to their comparative advantage, including in agriculture, which is still constrained in the ASEAN region both directly by significant tariff and nontariff barriers to imports of cereals and other food commodities and indirectly by substantial protection for industrial sectors. In the case of Singapore, the quantitative results reflect the country's reduced hegemony over other developing-country exporters in regional markets for manufactures under MFN liberalization and suggest that the country's greater economic interest lies in successful multilateral rather than regional liberalization of international trade relations. Finally, the simulation results indicate that although the liberalization of ASEAN trade relations on an MFN basis results in smaller gains in intra-ASEAN trade (US\$1.7 billion), the estimated gain in total ASEAN trade with the world (US\$9.1 billion) is more than three times larger than under the AFTA plan (US\$2.4 billion).

These findings for the new ASEAN Free Trade Area cast doubt on the desirability of pursuing preferential or free trading areas among developing countries in other regions. But, to the extent they are driven by many of the same political economy factors, the formation of such trading arrangements in other regions is likely to continue to enjoy favor, albeit with little prospect of achieving appreciably greater gains to agriculture and national economic welfare than found in the ASEAN example.

Ironically, the present resurgence of interest in regional schemes to expand trade has its origins in dissatisfaction with multilateral efforts under the GATT to achieve continued, and more timely, progress in liberalizing global trade relations. Moreover, regional trading arrangements among developing countries have also come to be viewed as providing an economic defense against shifting patterns of trade and investment likely to follow in the wake of the initiatives in North America and Western Europe to establish free trading areas. In this vein, policymakers in developing areas also see regional trading arrangements as appropriate instruments for bargaining more effectively within the GATT and in their bilateral negotiations with officials from larger and more-developed countries. ASEAN policymakers, for instance, believe that bargaining on a united basis, bolstered by the new ASEAN Free Trade Area, will provide them with more economic leverage to gain reciprocal trade concessions for increased access to markets in the European Union, Japan, and the United States.

The last view is likely to be persuasive in many policymaking circles. But this view confuses the gains from trade with the interests of local producers in increasing their output, destined for either sheltered regional markets or more open markets abroad. The gains from trade, however, ultimately concern the possibilities for increased consumption of goods and services at the lowest possible resource cost. From this normative perspective, the largest gains from trade, as illustrated here, are actually within the grasp of most countries if they act unilaterally or in concert to reduce their own levels of protection on a most-favored-nation basis and pursue their comparative advantage in available, albeit frequently protection-ridden, world markets. From an international political economy perspective, on the other hand, a question for future research is whether as a consequence of the emerging competition between multilateral and regional approaches to trade liberalization, the current economic and political exigencies calling for the widespread formation of regional trading arrangements might ultimately lead to a desirable outcome for the world economy reflecting the objectives of multilateralism and improving the circumstances of agriculture in developing countries.

APPENDIX 1: IMPORT RESTRICTIONS IN ASEAN COUNTRIES

Table 15—Import restrictions in ASEAN countries by primary product and manufacturing sectors, 1987

Country/Sector	Tariffs and Paratariffs		Frequency of Nontariff Barriers ^a				
	Mean Tariff	Total Charges ^b	All Nontariff Barriers	Quantitative Restrictions			
				Licenses	Quotas	Prohibi- tions	Other ^c
	(percent)						
Indonesia							
Primary products	14.7	14.7	98.9	61.7	13.8	21.8	1.6
Foods	24.5	24.5	99.8	21.5	29.4	45.6	3.3
Cereals	3.6	3.6	100.0	0.0	0.0	56.4	43.6
Vegetable oils and oilseeds	29.3	29.3	100.0	2.0	0.0	98.0	0.0
Agricultural raw materials	10.2	10.3	95.8	94.0	0.0	1.8	0.0
Textile fibers	8.8	9.1	89.0	89.0	0.0	0.0	0.0
Crude fertilizers and mineral ores	4.4	4.4	99.7	99.7	0.0	0.0	0.0
Mineral fuels	4.7	4.7	100.0	100.0	0.0	0.0	0.0
Nonferrous metals	9.2	9.2	100.0	98.5	0.0	0.0	1.5
Manufactured products	19.4	19.6	93.1	87.0	1.5	0.5	4.1
Chemicals	11.0	11.0	95.6	88.2	6.7	0.7	0.0
Pharmaceuticals	4.8	4.8	100.0	100.0	0.0	0.0	0.0
Toiletries and perfumes	24.1	24.1	99.0	99.0	0.0	0.0	0.0
Manufactured fertilizers	0.0	0.0	100.0	100.0	0.0	0.0	0.0
Iron and steel	8.2	8.2	99.3	58.4	0.0	0.0	40.9
Machinery and equipment	16.4	16.7	91.3	84.1	0.0	1.2	6.0
Nonelectric machinery	12.6	13.1	96.6	87.2	0.0	0.0	9.4
Electric machinery	25.2	25.2	80.5	77.4	0.0	3.1	0.0
Transportation equipment	17.9	17.9	86.8	82.2	0.0	2.8	1.8
Other manufactured products	27.3	27.4	92.1	91.3	0.2	0.2	0.4
Leather and travel goods	28.2	28.2	100.0	100.0	0.0	0.0	0.0
Rubber products	10.3	10.3	66.1	66.1	0.0	0.0	0.0
Wood products	26.0	26.0	100.0	100.0	0.0	0.0	0.0
Paper products	29.1	29.4	84.5	84.5	0.0	0.0	0.0
Textiles and clothing	32.7	32.7	87.5	87.3	0.0	0.0	0.2
Nonmetal mineral products	26.1	26.1	93.6	93.6	0.0	0.0	0.0
Furniture	42.2	42.2	100.0	100.0	0.0	0.0	0.0
Footwear	54.0	54.0	100.0	100.0	0.0	0.0	0.0
Professional equipment	12.7	12.7	98.4	98.4	0.0	0.0	0.0
All goods	18.1	18.2	94.7	80.1	4.9	6.4	3.3

(continued)

Table 15—Continued

Country/Sector	Tariffs and Paratariffs		Frequency of Nontariff Barriers ^a				
	Mean Tariff	Total Charges ^b	All Nontariff Barriers	Quantitative Restrictions			Other ^c
				Licenses	Quotas	Prohibitions	
			(percent)				
Malaysia							
Primary products	8.6	8.7	4.5	4.3	0.0	0.2	0.0
Foods	12.3	12.5	5.6	5.4	0.0	0.2	0.0
Cereals	2.0	2.0	30.8	30.8	0.0	0.0	0.0
Vegetable oils and oilseeds	4.6	4.6	0.0	0.0	0.0	0.0	0.0
Agricultural raw materials	7.4	7.4	6.1	5.7	0.0	0.4	0.0
Textile fibers	2.3	2.3	0.0	0.0	0.0	0.0	0.0
Crude fertilizers and mineral ores	3.5	3.5	3.7	3.7	0.0	0.0	0.0
Mineral fuels	5.5	5.6	0.0	0.0	0.0	0.0	0.0
Nonferrous metals	7.1	7.2	0.0	0.0	0.0	0.0	0.0
Manufactured products	15.4	16.2	3.2	3.2	0.0	0.1	0.0
Chemicals	8.9	9.4	3.0	3.0	0.0	0.1	0.0
Pharmaceuticals	3.3	3.3	0.0	0.0	0.0	0.0	0.0
Toiletries and perfumes	7.4	8.3	0.0	0.0	0.0	0.0	0.0
Manufactured fertilizers	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Iron and steel	6.1	6.1	8.3	8.3	0.0	0.0	0.0
Machinery and equipment	11.5	11.6	4.0	3.8	0.0	0.2	0.0
Nonelectric machinery	7.1	7.1	1.9	1.6	0.0	0.3	0.0
Electric machinery	20.3	20.5	5.4	5.3	0.0	0.1	0.0
Transportation equipment	15.2	15.4	10.7	10.7	0.0	0.0	0.0
Other manufactured products	21.0	22.5	2.3	2.3	0.0	0.0	0.0
Leather and travel goods	27.5	27.5	0.0	0.0	0.0	0.0	0.0
Rubber products	31.7	32.6	0.0	0.0	0.0	0.0	0.0
Wood products	23.1	23.1	0.0	0.0	0.0	0.0	0.0
Paper products	15.4	16.4	0.0	0.0	0.0	0.0	0.0
Textiles and clothing	26.0	28.9	0.5	0.5	0.0	0.0	0.0
Nonmetal mineral products	17.7	18.3	13.4	13.4	0.0	0.0	0.0
Furniture	40.4	40.4	0.0	0.0	0.0	0.0	0.0
Footwear	33.6	36.4	0.0	0.0	0.0	0.0	0.0
Professional equipment	6.8	6.9	0.0	0.0	0.0	0.0	0.0
All goods	13.6	14.3	3.7	3.6	0.0	0.1	0.0

(continued)

Table 15—Continued

Country/Sector	Tariffs and Paratariffs		Frequency of Nontariff Barriers ^a				
	Mean Tariff	Total Charges ^b	All Nontariff Barriers	Quantitative Restrictions			Other ^c
				Licenses	Quotas	Prohibitions	
			(percent)				
Philippines							
Primary products	26.9	31.9	40.5	32.9	3.6	1.7	2.3
Foods	35.8	40.8	60.0	45.6	7.7	3.2	3.5
Cereals	36.9	41.9	100.0	57.7	38.5	0.0	3.8
Vegetable oils and oilseeds	26.4	31.4	26.0	26.0	0.0	0.0	0.0
Agricultural raw materials	22.7	27.7	24.2	20.2	0.0	0.9	3.1
Textile fibers	21.8	26.8	2.3	0.0	0.0	0.0	2.3
Crude fertilizers and mineral ores	12.6	17.6	12.7	12.7	0.0	0.0	0.0
Mineral fuels	16.0	21.0	75.0	75.0	0.0	0.0	0.0
Nonferrous metals	21.4	26.4	0.0	0.0	0.0	0.0	0.0
Manufactured products	28.5	33.5	46.3	42.7	0.6	0.4	2.6
Chemicals	18.4	23.4	47.7	47.2	1.8	0.0	0.0
Pharmaceuticals	12.5	17.5	95.0	95.0	17.5	0.0	0.0
Toiletries and perfumes	32.5	37.5	16.7	16.7	0.0	0.0	0.0
Manufactured fertilizers	17.6	22.6	100.0	100.0	0.0	0.0	0.0
Iron and steel	14.3	19.3	20.1	20.1	0.0	0.0	0.0
Machinery and equipment	23.7	28.7	87.6	87.3	0.2	0.0	0.1
Nonelectric machinery	20.5	25.5	88.2	88.1	0.0	0.0	0.1
Electric machinery	32.4	37.4	98.1	97.5	0.6	0.0	0.0
Transportation equipment	21.7	26.7	65.1	65.1	0.0	0.0	0.0
Other manufactured products	37.1	42.1	28.0	20.9	0.5	0.8	5.8
Leather and travel goods	33.9	38.9	29.4	2.9	0.0	0.0	26.5
Rubber products	28.7	33.7	46.3	36.9	0.0	18.8	0.0
Wood products	38.5	43.5	17.3	14.9	0.0	0.0	2.4
Paper products	35.5	40.5	57.9	55.5	0.0	0.0	2.4
Textiles and clothing	43.2	48.2	12.8	9.0	0.0	0.0	3.8
Nonmetal mineral products	35.5	40.5	33.5	24.1	0.0	0.0	9.4
Furniture	47.1	52.1	46.4	46.4	0.0	0.0	0.0
Footwear	47.0	52.0	25.0	25.0	0.0	0.0	0.0
Professional equipment	19.3	24.3	16.5	13.4	1.8	0.0	1.3
All goods	28.1	33.1	44.9	40.2	1.5	0.7	2.5

(continued)

Table 15—Continued

Country/Sector	Tariffs and Paratariffs		Frequency of Nontariff Barriers ^a				
	Mean Tariff	Total Charges ^b	All Nontariff Barriers	Quantitative Restrictions			Other ^c
				Licenses	Quotas	Prohibitions	
			(percent)				
Singapore							
Primary products	0.1	0.1	15.3	15.3	0.0	0.0	0.0
Foods	0.1	0.1	21.8	21.8	0.0	0.0	0.0
Cereals	0.0	0.0	30.8	30.8	0.0	0.0	0.0
Vegetable oils and oilseeds	0.0	0.0	4.0	4.0	0.0	0.0	0.0
Agricultural raw materials	0.0	0.0	19.4	19.4	0.0	0.0	0.0
Textile fibers	0.0	0.0	15.9	15.9	0.0	0.0	0.0
Crude fertilizers and mineral ores	0.0	0.0	4.5	4.5	0.0	0.0	0.0
Mineral fuels	1.9	1.9	1.6	1.6	0.0	0.0	0.0
Nonferrous metals	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manufactured products	0.4	0.4	14.1	13.8	0.0	0.4	0.0
Chemicals	0.0	0.0	49.0	48.6	0.0	0.4	0.0
Pharmaceuticals	0.0	0.0	95.0	95.0	0.0	0.0	0.0
Toiletries and perfumes	0.0	0.0	42.4	42.4	0.0	0.0	0.0
Manufactured fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iron and steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Machinery and equipment	0.3	0.3	4.0	3.3	0.0	0.7	0.0
Nonelectric machinery	0.0	0.0	1.0	1.0	0.0	0.0	0.0
Electric machinery	0.0	0.0	11.8	9.5	0.0	2.5	0.0
Transportation equipment	2.4	2.4	2.9	2.3	0.0	0.6	0.0
Other manufactured products	0.7	0.7	5.4	5.2	0.0	0.2	0.0
Leather and travel goods	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Rubber products	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wood products	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paper products	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles and clothing	1.7	1.7	8.5	8.1	0.0	0.4	0.0
Nonmetal mineral products	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Furniture	2.2	2.2	0.0	0.0	0.0	0.0	0.0
Footwear	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Professional equipment	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All goods	0.3	0.3	14.7	14.4	0.0	0.3	0.0

(continued)

Table 15—Continued

Country/Sector	Tariffs and Paratariffs		Frequency of Nontariff Barriers ^a				
	Mean Tariff	Total Charges ^b	All Nontariff Barriers	Quantitative Restrictions			Other ^c
				Licenses	Quotas	Prohibitions	
			(percent)				
Thailand							
Primary products	28.0	38.0	24.4	21.0	0.0	8.2	0.0
Foods	41.4	51.4	36.9	30.5	0.0	16.5	0.0
Cereals	5.0	15.0	61.5	30.8	0.0	30.8	0.0
Vegetable oils and oilseeds	39.7	49.7	96.0	96.0	0.0	48.0	0.0
Agricultural raw materials	23.7	33.7	14.9	14.9	0.0	0.0	0.0
Textile fibers	32.0	42.0	2.3	2.3	0.0	0.0	0.0
Crude fertilizers and mineral ores	9.2	19.2	17.9	17.9	0.0	0.0	0.0
Mineral fuels	10.7	20.7	11.1	11.1	0.0	0.0	0.0
Nonferrous metals	15.2	25.2	5.7	1.9	0.0	4.7	0.0
Manufactured products	32.5	42.5	7.8	5.9	0.0	1.8	0.1
Chemicals	25.5	35.5	6.0	5.9	0.0	0.2	0.0
Pharmaceuticals	20.5	30.5	0.0	0.0	0.0	0.0	0.0
Toiletries and perfumes	45.3	55.3	0.0	0.0	0.0	0.0	0.0
Manufactured fertilizers	0.0	10.0	0.0	0.0	0.0	0.0	0.0
Iron and steel	16.2	26.2	8.0	6.0	0.0	2.0	0.0
Machinery and equipment	23.4	33.4	9.4	8.1	0.0	1.3	0.0
Non-electric machinery	19.5	29.5	5.8	5.8	0.0	0.0	0.0
Electric machinery	33.3	43.3	15.6	13.8	0.0	1.9	0.0
Transportation equipment	22.8	32.8	14.0	8.1	0.0	5.8	0.1
Other manufactured products	41.2	51.2	7.7	4.9	0.0	2.8	0.0
Leather and travel goods	54.1	64.1	0.0	0.0	0.0	0.0	0.0
Rubber products	42.0	52.0	0.0	0.0	0.0	0.0	0.0
Wood products	26.7	36.7	83.3	83.3	0.0	0.0	0.0
Paper products	30.7	40.7	21.5	15.3	0.0	6.3	0.0
Textiles and clothing	51.5	61.5	0.9	0.5	0.0	0.4	0.0
Non-metal mineral products	31.8	48.1	8.0	1.8	0.0	6.3	0.0
Furniture	53.6	63.6	0.0	0.0	0.0	0.0	0.0
Footwear	54.0	64.0	0.0	0.0	0.0	0.0	0.0
Professional equipment	25.7	35.7	1.4	0.0	0.0	1.4	0.0
All goods	31.2	41.2	12.4	10.2	0.0	3.6	0.0

Sources: UNCTAD 1987, 1989.

Note: Statistics by country are simple averages of rates of protection across traded goods categories.

^aPercentage of national tariff schedule lines affected by nontariff barriers, within the product category.

^bCustoms duties plus customs surcharges and surtaxes, stamp taxes, certain other fiscal charges, and tax on foreign exchange transactions.

^cForeign exchange restrictions, decreed customs value, or state trading monopolies.

APPENDIX 2: THE ASEAN TRADE SIMULATION MODEL

This appendix presents the details of the specifications of the ASEAN trade simulation model. For each ASEAN country, the output of the nontraded goods sector is assumed to be the numeraire commodity, and, accordingly, the price of output of the sector is exogenously determined. For each non-ASEAN country, wage and exchange rates, sectoral prices, aggregate expenditures, and levels of production of both traded and nontraded goods are also exogenous. Finally, with regard to the notation employed below, the e -operator denotes proportional changes in variables (for example, $eX = dX/X$).

Equations

Traded Goods Sectors ($k \leq n$)

Demand (using tariff-equivalent changes in administered protection):

$$\begin{aligned} eD_{kij} = & (1 - HDQ_{kj})\{HDF_{kj}[\sum_g \eta^F_{kij/g}(eP_{kg} - eR_j + eT_{kgj}) + eE_j] \\ & + (1 - HDF_{kj})[\sum_g \eta^I_{kij/g}(eP_{kg} - eR_j + eT_{kgj}) + \sum_r HDI_{ki/r} eS_{rj}]\} \\ & + HDQ_{kj}[HDF_{kj}\eta^F_{kij/i} + (1 - HDF_{kj})\eta^I_{kij/i}](eTQ_{kij}), \end{aligned} \quad (1a)$$

Demand (using quantity changes in administered protection):

$$\begin{aligned} eD_{kij} = & (1 - HDQ_{kj})\{HDF_{kj}[\sum_g \eta^F_{kij/g}(eP_{kg} - eR_j + eT_{kgj}) + eE_j] \\ & + (1 - HDF_{kj})[\sum_g \eta^I_{kij/g}(eP_{kg} - eR_j + eT_{kgj}) + \sum_r HDI_{ki/r} eS_{rj}]\} \\ & + HDQ_{kj}(eQ_{kij}), \end{aligned} \quad (1b)$$

where

$$\eta^F_{kij/g} = -\epsilon_{kj} + HDM_{kgj}(\epsilon_{kj} - 1) \text{ and } \eta^I_{kij/g} = -\epsilon_{kj} + HDM_{kgj}(\epsilon_{kj})$$

(for $g = i$),

and

$$\eta^F_{kij/g} = HDM_{kgj}(\epsilon_{kj} - 1) \text{ and } \eta^I_{kij/g} = HDM_{kgj}(\epsilon_{kj}) \text{ (for } g \neq i).$$

Supply:

$$\begin{aligned} eS_{ki} = & \sigma_{ki}\{eP_{ki} - eR_i \\ & - \sum_r HSB_{ki/r}[\sum_g HDM_{rgi}(eP_{rg} - eR_i + eT_{rgi})] \\ & - HSB_{ki/L}eW_i\} + eK_{ki}. \end{aligned} \quad (2)$$

Market equilibrium:

$$\Sigma_j HDX_{kij} eD_{i,j} = eS_{ki}. \quad (3)$$

Nontraded Goods Sector ($k = n + 1$)

Demand:

$$eD_{kii} = HDF_{ki} \{ \Sigma_r \eta_{kii/r}^F [\Sigma_g HDM_{rgi} (eP_{rg} - eR_i + eT_{rgi})] + eE_i \} \\ + (1 - HDF_{ki}) \Sigma_r HDI_{ki/r} eS_{ri}. \quad (4)$$

Supply:

$$eS_{ki} = -\sigma_{ki} \{ \Sigma_r HSB_{ki/r} [\Sigma_j HDM_{rji} (eP_{rj} - eR_i + eT_{rji})] \\ + HSB_{ki/L} eW_i \} + eK_{ki}. \quad (5)$$

Market equilibrium:

$$eD_{kii} = eS_{ki}. \quad (6)$$

Labor Services

Demand:

$$eL_{ki} = (1/HVL_{ki}) eS_{ki} - (HVK_{ki}/HVL_{ki}) eK_{ki}. \quad (7)$$

Supply:

$$eL_i = 0. \quad (8)$$

Market equilibrium:

$$\Sigma_k HLD_{ki} eL_{ki} = eL_i. \quad (9)$$

International Payments

$$dBP_i = 0, \quad (10)$$

where

$$dBP_i = \Sigma_k \Sigma_{j \neq i} [VX_{kij} (eP_{ki} + eD_{kij}) \\ - VX_{kji} (eP_{kj} + eD_{kji})] + dFA_i.$$

Aggregate Expenditure

$$eE_i = \Sigma_k HES_{ki} (eS_{ki} + eP_{ki} - eR_i) - \Sigma_k \Sigma_j HEI_{kji} (eDI_{kji} + eP_{kj} \\ - eR_i + eT_{kji}) + \Sigma_k \Sigma_j HET_{kji} \{ eD_{kji} + eP_{kj} - eR_i \\ + [T_{kji}/(T_{kji} - 1)] eT_{kji} \} + HEF_i (eFA_i - eR_i), \quad (11)$$

where (using quantity changes in administered protection)

$$eDI_{kji} = (1 - HDQ_{ki})[\sum_g \eta^I_{kji/g}(eP_{kg} - eR_i + eT_{kgi}) + \sum_r HDI_{kjr} eS_{ri}] + HDQ_{ki}(eQ_{kji}).$$

Economic Welfare

$$eA_i = eE_i - \sum_k \sum_j HDF_{ki} HDM_{kji}(eP_{kj} - eR_i + eT_{kji}). \quad (12)$$

Definition of Variables

Endogenous Variables

- D_{kij} = total demand in country j for good k produced in country i ,
- DI_{kij} = total intermediate demand in country j for good k produced in country i ,
- S_{ki} = production of good k in country i ,
- P_{ki} = price of good k produced in country i , in U.S. dollars,
- R_i = exchange rate for the currency of country i , in terms of U.S. dollars,
- W_i = wage rate in country i ,
- L_{ki} = demand for labor in the production of good k in country i ,
- BP_i = balance of international payments of country i , in U.S. dollars,
- E_i = level of total expenditures on final demand in country i , and
- A_i = real absorption in country i .

Exogenous Variables

- L_i = aggregate supply of labor in country i ,
- K_{ki} = supply of specific physical capital (and other primary resources) used in the production of good k in country i ,
- FA_i = amount of foreign assets invested in country i , in U.S. dollars,
- T_{kij} = one plus the ad valorem tariff rate enforced by country j against imports of good k produced in country i ,
- TQ_{kij} = one plus the tariff-equivalent rate of protection enforced by country j through the application of nontariff barriers against imports of good k produced in country i , and
- Q_{kij} = import supply of good k produced in country i administered by country j through the enforcement of nontariff barriers against imports.

Parameters

- $\eta^F_{kij/g}$ = elasticity of final demand in country j for good k produced in country i with respect to the price of good k produced in country g ($k \leq n$),

- $\eta_{kij/r}^F$ = elasticity of final demand in country j for nontraded good k ($k = n + 1$) with respect to the aggregate price in country j of traded good r ($r \leq n$),
- $\eta_{kij/g}^I$ = elasticity of intermediate demand in country j for good k produced in country i with respect to the price of good k produced in country g ($k \leq n$),
- ϵ_{ki} = elasticity of substitution of demand in country i for good k produced in different countries,
- σ_{ki} = elasticity of substitution between labor and capital (and other primary resources) in the production of good k in country i ,
- $H D Q_{ki}$ = frequency of nontariff barriers against imports of good k by country i ,
- $H D F_{ki}$ = share of final demand in total demand for good k in country i ,
- $H D I_{ki/r}$ = share of intermediate demand for good k to produce good r in total intermediate demand for good k in country i ,
- $H S B_{ki/r}$ = expenditure on input of good r as a fraction of total revenue from production of good k in country i ,
- $H S B_{ki/L}$ = expenditure on input of labor as a fraction of total revenue from production of good k in country i ,
- $H D X_{kij}$ = share of exports of good k to country j in total value of production of good k in country i ,
- $H D M_{kij}$ = share of imports of good k from country i in total value of expenditures on good k in country j ,
- $H V L_{ki}$ = share of wages in value-added of good k produced in country i ,
- $H V K_{ki}$ = share of returns to nonlabor resources in value-added of good k produced in country i ,
- $H L D_{ri}$ = share of labor used to produce good r in total demand for labor in country i ,
- $V X_{kij}$ = value of exports to country j of good k produced in country i , in U.S. dollars,
- $H E S_{ki}$ = share of revenues from the production of good k in total expenditures on final demand in country i ,
- $H E I_{kji}$ = share of intermediate demand expenditures on good k produced in country j in total expenditures on final demand in country i ,
- $H E T_{kji}$ = share of tariff revenues from imports of good k produced in country j in total expenditures on final demand in country i , and
- $H E F_i$ = share of net foreign assets inflow in total expenditures on final demand in country i .

APPENDIX 3: SIMULATION RESULTS BY ASEAN COUNTRY

Table 16—Changes in production, consumption, and trade under Scenario 1: Indonesia

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	0.17	0.10	-0.09	0.04	130.29	102.01	26.80	130.29	134.12	-3.33
Primary products	0.10	0.06	0.00	0.00	52.01	14.48	32.89	32.07	32.21	-0.09
Agriculture	0.04	0.03	-0.07	0.00	38.35	14.35	20.71	31.53	31.67	-0.09
Foods	-0.06	0.00	-0.19	0.02	31.53	14.17	15.35	31.62	31.62	0.00
Cereals	0.11	0.02	0.11	0.00	0.02	0.01	0.00	-0.01	-0.01	0.00
Vegetable oils and oilseeds	-1.30	-0.69	-2.70	0.04	24.22	13.73	9.47	31.65	31.65	0.00
Other foods	0.09	0.11	0.08	0.02	7.29	0.43	5.87	-0.03	-0.02	0.00
Agricultural raw materials	0.12	0.06	0.12	-0.03	6.82	0.18	5.37	-0.09	0.04	-0.08
Textile fibers	0.22	0.13	0.07	-0.02	0.02	0.60	0.00	-0.05	0.00	-0.02
Other agricultural raw materials	0.12	0.06	0.12	-0.03	6.80	0.18	5.37	-0.04	0.04	-0.06
Other primary products	0.23	0.12	0.20	-0.09	13.66	0.13	12.18	0.55	0.55	0.00
Crude fertilizers	0.23	0.06	0.18	-0.08	0.57	-0.01	0.53	-0.01	0.00	0.00
Mineral fuels	0.23	0.13	0.20	-0.09	12.71	0.05	11.42	0.55	0.55	0.00
Nonferrous metals	0.25	0.09	0.15	-0.07	0.39	0.09	0.22	0.00	0.00	0.00
Manufactures	0.52	0.28	-0.21	0.20	78.28	87.53	-6.09	98.22	101.90	-3.24
Chemicals	0.72	0.63	-1.38	1.67	21.15	21.02	-0.20	77.87	79.73	-1.37
Pharmaceuticals	0.39	0.37	-0.25	0.50	0.59	0.60	-0.01	1.21	1.21	0.00
Toiletries, perfumes	0.23	0.24	-0.35	-0.01	1.37	1.33	0.04	0.96	0.97	-0.01
Manufactured fertilizers	1.38	1.16	1.09	-1.35	9.20	9.03	-0.19	0.12	0.12	0.00
Other chemicals	0.35	0.33	-1.91	2.34	9.99	10.06	-0.04	75.57	77.42	-1.36

(continued)

Table 16—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Iron and steel	0.18	0.07	0.12	-0.01	0.46	0.08	0.37	0.03	0.06	-0.01
Machinery and equipment	0.50	0.32	-0.21	0.17	2.75	3.16	-0.26	9.83	12.23	-2.03
Nonelectric machinery	0.18	0.18	0.01	-0.01	0.02	0.01	0.02	0.03	0.17	-0.11
Electric machinery	1.76	1.50	-1.57	1.21	2.70	3.15	-0.29	9.95	12.02	-1.74
Transport equipment	0.22	0.04	0.07	-0.03	0.02	0.00	0.01	-0.16	0.04	-0.18
Other manufactures	0.56	0.28	0.26	-0.30	53.92	63.28	-6.00	10.49	9.90	0.17
Leather and travel goods	0.44	0.22	-0.53	0.38	0.32	0.44	-0.07	0.10	0.10	0.00
Rubber products	0.11	0.14	-0.88	0.81	1.76	1.64	0.07	2.69	3.01	-0.25
Wood products	0.18	0.08	0.18	-0.09	1.31	0.00	1.36	0.00	0.00	0.00
Paper products	0.99	0.77	0.40	-0.65	7.17	7.60	-0.07	1.35	1.21	0.10
Textile and clothing	1.03	0.52	0.87	-1.00	36.63	47.31	-7.47	3.44	2.55	0.40
Nonmetal mineral products	0.08	-0.01	-0.10	-0.04	6.27	5.86	0.22	2.83	2.90	-0.05
Furniture	0.25	0.07	-0.11	-0.35	0.41	0.37	0.04	0.12	0.12	0.00
Footwear	0.39	-0.29	0.29	-0.26	-0.15	0.00	-0.15	0.00	0.00	0.00
Professional equipment	0.14	0.26	0.01	0.00	0.02	0.01	0.01	0.01	0.01	-0.01
Other manufactures	0.23	0.07	0.09	-0.03	0.18	0.04	0.07	-0.05	-0.01	-0.03
Nontraded goods	0.00	-0.12	0.00	-0.16	...	...	...	...	...	...
All goods	0.10	0.01	-0.64	-0.07	130.29	102.01	26.80	130.29	134.12	-3.33

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 17—Changes in production, consumption, and trade under Scenario 2: Indonesia

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	0.50	0.22	-0.03	0.08	212.94	127.48	76.55	212.94	222.77	-8.35
Primary products	0.40	0.17	0.19	-0.12	106.16	15.92	78.73	32.19	32.63	-0.26
Agriculture	0.29	0.09	0.17	-0.11	63.94	15.47	41.14	31.22	31.65	-0.26
Foods	0.19	0.05	0.05	-0.08	44.13	15.05	25.42	31.57	31.59	-0.01
Cereals	0.30	0.04	0.29	-0.03	0.04	0.01	0.01	-0.03	-0.03	0.00
Vegetable oils and oilseeds	-0.95	-0.60	-2.40	-0.09	26.02	14.16	10.71	31.71	31.71	0.00
Other foods	0.34	0.15	0.33	-0.10	18.07	0.87	14.70	-0.10	-0.08	-0.01
Agricultural raw materials	0.37	0.13	0.36	-0.15	19.81	0.42	15.72	-0.36	0.06	-0.25
Textile fibers	0.66	0.31	0.22	-0.07	0.06	0.01	0.00	-0.18	0.00	-0.08
Other agricultural raw materials	0.37	0.13	0.36	-0.15	19.76	0.41	15.72	-0.18	0.06	-0.17
Other primary products	0.66	0.36	0.59	-0.34	42.22	0.45	37.58	0.97	0.98	0.00
Crude fertilizers	0.65	0.21	0.50	-0.26	2.08	0.10	1.83	-0.02	-0.01	0.00
Mineral fuels	0.66	0.38	0.59	-0.34	39.13	0.11	35.17	0.98	0.98	0.00
Nonferrous metals	0.75	0.27	0.46	-0.28	1.01	0.23	0.58	0.01	0.01	0.00
Manufactures	0.94	0.42	-0.93	0.91	106.79	111.56	-2.17	180.75	190.14	-8.08
Chemicals	1.17	0.77	-1.25	1.60	21.49	21.16	-0.05	78.04	79.95	-1.40
Pharmaceuticals	0.85	0.52	-0.08	0.42	0.61	0.61	0.00	1.21	1.21	0.00
Toiletries and perfumes	0.68	0.38	-0.07	-0.18	1.47	1.34	0.11	0.97	0.97	-0.01
Manufactured fertilizers	1.78	1.27	1.41	-1.54	9.27	9.11	-0.16	0.12	0.12	0.00
Other chemicals	0.83	0.50	-1.82	2.29	10.15	10.10	0.01	75.74	77.64	-1.39
Iron and steel	0.74	0.41	0.30	-0.12	12.97	12.60	0.35	7.82	7.86	-0.02
Machinery and equipment	0.66	0.51	-1.26	1.26	4.45	4.87	-0.28	71.47	78.33	-5.99
Nonelectric machinery	2.05	1.33	-1.35	1.39	0.89	1.11	-0.19	48.20	49.51	-1.10
Electric machinery	2.10	1.82	-1.46	1.12	2.80	3.18	-0.25	9.49	12.01	-2.12
Transport equipment	0.17	0.11	-0.91	0.98	0.75	0.58	0.15	13.78	16.80	-2.77

(continued)

Table 17—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	0.96	0.38	-0.10	-0.15	67.87	72.92	-2.19	23.42	24.01	-0.66
Leather and travel goods	0.92	0.37	-0.53	0.38	0.38	0.44	-0.04	0.10	0.10	0.00
Rubber products	0.55	0.28	-0.53	0.58	1.84	1.64	0.11	2.64	3.00	-0.28
Wood products	0.54	0.22	0.53	-0.34	3.94	0.33	3.84	0.05	0.05	0.00
Paper products	1.37	0.88	0.68	-0.82	7.35	7.67	-0.05	1.27	1.21	0.05
Textile and clothing	1.51	0.60	1.31	-1.33	37.74	47.32	-6.70	3.36	2.55	0.37
Nonmetal mineral products	0.28	-0.01	0.09	-0.08	7.12	5.93	0.62	2.74	2.89	-0.10
Furniture	0.67	0.26	0.24	-0.58	0.58	0.37	0.21	0.12	0.12	0.00
Footwear	0.84	-0.25	-0.66	-1.26	0.02	0.02	-0.01	0.09	0.09	0.00
Professional equipment	0.76	0.93	-0.92	0.96	0.20	0.19	0.01	3.20	3.25	-0.04
Other manufactures	0.95	0.60	-1.73	0.66	8.71	9.00	-0.17	9.84	10.76	-0.65
Nontraded goods	0.00	-0.32	0.00	-0.41	...	...	...	...	...	...
All goods	0.30	0.01	-0.01	-0.19	212.94	127.48	76.55	212.94	222.77	-8.35

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (. . .) indicate not applicable.

Table 18—Changes in production, consumption, and trade under Scenario 3: Indonesia

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	0.53	0.24	-0.04	0.02	341.71	257.19	77.16	341.71	351.36	-8.15
Primary products	0.45	0.20	0.18	-0.20	235.51	145.52	80.07	160.18	160.68	-0.27
Agriculture	0.37	0.13	0.18	-0.23	146.64	108.18	32.54	57.14	57.64	-0.27
Foods	0.23	0.06	0.01	-0.22	94.51	69.33	22.04	49.74	49.76	-0.01
Cereals	0.30	0.02	0.27	0.01	0.24	0.22	0.01	2.35	2.35	0.00
Vegetable oils and oilseeds	-0.93	-0.60	-2.39	-0.09	26.00	14.49	10.38	31.87	31.87	0.00
Other foods	0.40	0.18	0.27	-0.30	68.27	54.62	11.65	15.51	15.53	-0.01
Agricultural raw materials	0.48	0.18	0.45	-0.24	52.12	38.85	10.50	7.40	7.88	-0.26
Textile fibers	0.81	0.37	-0.06	0.24	1.40	1.40	0.00	2.68	3.00	-0.14
Other agricultural raw materials	0.48	0.18	0.47	-0.26	50.73	37.45	10.50	4.71	4.88	-0.12
Other primary products	0.65	0.39	0.16	0.36	88.87	37.34	47.53	103.04	103.04	0.00
Crude fertilizers	0.86	0.32	0.42	-0.04	9.47	10.17	-0.65	9.77	9.77	0.00
Mineral fuels	0.59	0.38	0.16	0.37	63.54	6.30	51.98	89.18	89.18	0.00
Nonferrous metals	1.35	0.76	0.47	-0.84	15.87	20.87	-3.80	4.08	4.08	0.00
Manufactures	0.91	0.39	-0.93	0.92	106.20	111.68	-2.91	181.54	190.68	-7.88
Chemicals	1.14	0.76	-1.26	1.61	21.48	21.18	-0.07	78.30	80.17	-1.38
Pharmaceuticals	0.82	0.51	-0.09	0.43	0.61	0.61	0.00	1.21	1.21	0.00
Toiletries and perfumes	0.65	0.37	-0.09	-0.16	1.46	1.34	0.10	0.97	0.98	-0.01
Manufactured fertilizers	1.76	1.26	1.40	-1.52	9.30	9.14	-0.17	0.12	0.12	0.00
Other chemicals	0.80	0.49	-1.83	2.29	10.11	10.08	0.00	75.99	77.85	-1.37
Iron and steel	0.71	0.38	0.28	-0.10	12.94	12.62	0.30	7.88	7.91	-0.02
Machinery and equipment	0.64	0.49	-1.27	1.26	4.46	4.90	-0.30	71.88	78.57	-5.85
Nonelectric machinery	2.02	1.32	-1.35	1.39	0.89	1.10	-0.19	48.39	49.66	-1.07
Electric machinery	2.09	1.81	-1.47	1.13	2.82	3.21	-0.25	9.58	12.04	-2.07
Transport equipment	0.15	0.09	-0.92	0.99	0.75	0.59	0.15	13.91	16.87	-2.71

(continued)

Table 18—Continued

Sector	Production ¹		Consumption ²		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	0.93	0.35	-0.11	-0.13	67.32	72.97	-2.84	23.48	24.03	-0.64
Leather and travel goods	0.89	0.35	-0.53	0.38	0.37	0.44	-0.04	0.10	0.10	0.00
Rubber products	0.53	0.27	-0.55	0.61	1.83	1.64	0.10	2.65	3.00	-0.28
Wood products	0.53	0.18	0.52	-0.32	3.65	0.33	3.40	0.05	0.05	0.00
Paper products	1.37	0.86	0.68	-0.82	7.41	7.76	-0.06	1.29	1.21	0.06
Textile and clothing	1.48	0.58	1.28	-1.29	37.55	47.29	-6.82	3.37	2.55	0.37
Nonmetal mineral products	0.24	-0.05	0.05	-0.03	7.10	5.90	0.62	2.71	2.86	-0.10
Furniture	0.65	0.22	0.23	-0.55	0.56	0.37	0.18	0.12	0.12	0.00
Footwear	0.81	-0.28	-0.68	-1.23	-0.00	0.02	-0.02	0.09	0.09	0.00
Professional equipment	0.74	0.92	-0.92	0.96	0.20	0.20	0.00	3.22	3.26	-0.04
Other manufactures	0.94	0.56	-1.73	0.66	8.66	9.02	-0.21	9.87	10.78	-0.64
Nontraded goods	0.00	-0.37	0.00	-0.47	...	...	...	...	...	...
All goods	0.33	0.00	-0.02	-0.25	341.71	257.19	77.16	341.71	351.36	-8.15

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 19—Changes in production, consumption, and trade under Scenario 4: Indonesia

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	11.68	4.49	3.31	-0.44	3,102.22	212.79	2,484.29	3,102.22	287.91	2,004.45
Primary products	11.49	4.52	7.98	-4.35	2,624.73	137.67	2,164.02	784.73	134.70	314.75
Agriculture	9.02	2.34	7.63	-4.07	1,278.95	118.81	974.54	401.85	45.15	202.48
Foods	8.43	1.55	6.97	-3.78	676.32	80.89	514.23	244.15	39.19	114.56
Cereals	6.80	0.53	6.01	0.02	1.22	0.48	0.41	59.88	1.42	43.71
Vegetable oils and oilseeds	8.97	1.96	3.50	-4.36	120.86	27.99	84.50	78.38	27.50	17.23
Other foods	8.87	1.81	7.71	-4.72	554.24	52.43	429.32	105.88	10.26	53.61
Agricultural raw materials	9.54	3.22	8.72	-4.57	602.63	37.92	460.31	157.71	5.97	87.92
Textile fibers	12.94	4.85	-6.49	15.10	3.33	0.53	0.23	82.18	2.01	35.63
Other agricultural raw materials	9.52	3.01	9.20	-5.19	599.30	37.39	460.09	75.53	3.95	52.29
Other primary products	17.35	9.71	14.56	-9.53	1,345.78	18.86	1,189.48	382.88	89.55	112.27
Crude fertilizers	16.62	5.98	10.55	-3.28	76.77	7.29	64.22	82.15	8.52	40.06
Mineral fuels	17.39	10.25	14.58	-2.55	1,214.15	3.46	1,089.90	235.35	77.14	33.82
Nonferrous metals	17.97	7.13	5.01	-1.19	54.86	8.11	35.36	65.38	3.88	38.39
Manufactures	12.58	4.36	-15.66	15.45	477.49	75.12	320.27	2,317.49	153.22	1,689.70
Chemicals	13.92	5.69	-9.52	15.13	40.72	14.72	16.35	604.01	64.68	393.77
Pharmaceuticals	15.67	7.08	-3.09	13.08	1.82	0.50	0.87	25.26	0.86	18.17
Toiletries and perfumes	11.30	3.59	-3.34	1.06	10.84	0.88	8.17	18.80	0.84	15.50
Manufactured fertilizers	14.97	6.53	10.17	-1.30	7.19	8.50	1.42	20.33	0.11	9.82
Other chemicals	13.62	5.44	-13.41	18.86	20.88	4.83	5.89	539.62	62.87	350.28
Iron and steel	10.95	4.71	1.37	5.96	55.39	8.22	44.93	220.25	6.85	147.61
Machinery and equipment	8.85	4.89	-22.84	21.53	11.30	2.72	6.90	1,157.69	64.04	935.80
Nonelectric machinery	15.64	9.58	-24.52	23.82	1.80	0.48	1.20	784.69	43.92	623.15
Electric machinery	13.16	10.79	-26.12	19.58	4.88	1.73	1.96	152.05	8.15	120.89
Transport equipment	7.14	2.98	-16.24	16.61	4.62	0.51	3.74	220.96	11.97	191.76

(continued)

Table 19—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	12.85	4.14	-2.30	1.35	370.09	49.46	252.09	335.54	17.64	212.52
Leather and travel goods	17.09	11.78	-42.43	24.53	4.77	0.22	2.79	6.61	0.09	0.41
Rubber products	13.92	5.68	6.47	-2.36	7.11	1.04	3.54	9.71	1.90	6.19
Wood products	14.48	6.36	14.38	-10.66	98.30	0.22	111.11	0.67	0.04	0.37
Paper products	7.77	3.30	-4.37	2.84	14.22	4.70	1.51	34.23	0.69	23.21
Textile and clothing	15.00	4.40	10.95	-10.55	149.08	33.28	81.02	91.06	1.93	40.51
Nonmetal mineral products	4.48	-1.78	2.30	0.63	45.12	4.47	20.88	26.77	1.65	16.94
Furniture	15.74	6.25	7.59	-12.18	9.94	0.22	9.37	2.15	0.12	1.58
Footwear	19.01	7.42	2.57	-16.79	5.95	0.01	5.82	0.75	0.06	0.08
Professional equipment	12.93	13.26	-24.60	24.10	1.27	0.16	0.85	77.60	2.90	68.16
Other manufactures	12.84	4.90	-15.62	9.11	34.34	5.14	15.20	85.99	8.28	55.07
Nontraded goods	0.00	-7.73	0.00	-9.63	...	...	...	...	...	...
All goods	7.15	-0.26	1.44	-5.63	3,102.22	212.79	2,484.29	3,102.22	287.91	2,004.45

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 20—Changes in production, consumption, and trade under Scenario 1: Malaysia

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	0.51	0.27	-0.28	0.90	213.06	239.13	-20.90	213.06	396.27	-144.61
Primary products	0.47	0.13	0.44	0.21	44.11	54.29	-7.75	19.98	13.90	3.41
Agriculture	0.51	0.13	0.44	0.20	40.56	52.05	-8.77	21.96	17.13	2.63
Foods	0.63	0.19	0.44	0.20	34.63	41.04	-5.43	20.87	16.86	2.15
Cereals	0.44	0.07	0.26	0.20	0.01	0.01	0.00	0.58	0.29	0.18
Vegetable oils and oilseeds	0.78	0.27	0.53	0.13	30.15	35.48	-4.43	16.26	15.25	0.27
Other foods	0.47	0.10	0.42	0.22	4.48	5.55	-1.00	4.03	1.32	1.70
Agricultural raw materials	0.45	0.10	0.45	0.21	5.93	11.01	-3.34	1.09	0.27	0.48
Textile fibers	0.44	0.07	0.41	0.25	0.01	0.02	0.00	0.50	0.01	0.33
Other agricultural raw materials	0.45	0.10	0.45	0.21	5.93	10.99	-3.34	0.59	0.26	0.14
Other primary products	0.37	0.14	0.40	0.26	3.54	2.25	1.02	-1.98	-3.22	0.78
Crude fertilizers	0.32	0.18	0.34	0.31	0.28	0.05	0.18	-0.36	-0.03	-0.18
Mineral fuels	0.37	0.15	0.40	0.26	3.47	2.04	1.10	-3.14	-3.34	0.04
Nonferrous metals	0.45	0.06	0.43	0.23	-0.20	0.16	-0.25	1.52	0.15	0.92
Manufactures	0.60	0.55	-0.86	1.48	168.95	184.84	-13.15	193.08	382.37	-148.01
Chemicals	1.61	1.12	0.02	0.63	39.34	44.57	-4.16	37.57	46.82	-8.15
Pharmaceuticals	3.54	2.67	0.64	0.02	4.90	5.14	-0.22	2.93	1.74	0.87
Toiletries and perfumes	1.47	1.01	-0.10	0.76	3.67	3.79	-0.03	3.02	4.20	-0.90
Manufactured fertilizers	1.99	1.42	0.74	-0.09	4.21	4.83	-0.65	2.57	0.44	1.19
Other chemicals	1.42	0.97	-0.14	0.79	26.57	30.81	-3.27	29.05	40.44	-9.30
Iron and steel	0.44	0.02	0.39	0.23	0.17	0.22	-0.04	1.09	0.03	0.76
Machinery and equipment	0.66	0.61	-1.28	1.86	77.96	89.34	-9.55	100.89	247.30	-125.48
Nonelectric machinery	0.40	0.31	0.39	0.25	2.19	2.20	-0.01	6.20	0.24	5.07
Electric machinery	0.70	0.66	-2.90	3.45	75.61	86.96	-9.53	93.23	247.07	-131.93
Transport equipment	0.41	0.10	0.36	0.23	0.17	0.18	0.00	1.46	0.00	1.38

(continued)

Table 20—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	0.32	0.42	-0.51	1.16	51.47	50.71	0.60	53.54	88.21	-15.15
Leather and travel goods	-0.17	1.25	-3.55	4.25	0.26	0.22	0.04	0.44	1.27	-0.25
Rubber products	0.47	0.21	-0.33	0.99	3.04	3.15	-0.07	3.29	4.15	-0.71
Wood products	0.51	0.07	0.51	0.15	1.30	1.53	-0.21	0.00	-0.01	0.00
Paper products	-0.12	-0.21	-1.39	2.05	3.39	3.26	0.06	6.84	17.09	-6.85
Textile and clothing	0.42	0.89	-1.31	1.96	35.43	35.63	-0.18	33.29	54.55	-6.08
Nonmetal mineral products	-0.06	-0.23	-0.52	1.08	4.33	3.61	0.63	5.68	8.91	-2.50
Furniture	0.63	0.58	-1.42	2.09	1.29	1.45	-0.14	0.98	1.75	-0.66
Footwear	0.32	0.71	0.36	0.30	0.36	0.33	0.02	0.03	0.00	0.00
Professional equipment	0.27	0.39	0.40	0.26	0.52	0.34	0.14	1.22	0.04	1.04
Other manufactures	0.32	0.42	0.38	0.27	1.55	1.20	0.32	1.76	0.45	0.86
Nontraded goods	0.00	-0.35	0.00	-0.57	...	...	...	...	...	...
All goods	0.34	0.06	-0.12	0.05	213.06	239.13	-20.90	213.06	396.27	-144.61

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 21—Changes in production, consumption, and trade under Scenario 2: Malaysia

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	0.58	0.32	-0.43	1.18	273.01	314.88	-33.13	273.01	508.07	-180.76
Primary products	0.50	0.14	0.46	0.31	48.14	66.51	-13.67	23.40	14.67	4.85
Agriculture	0.56	0.14	0.47	0.30	46.67	64.27	-13.03	25.65	19.64	3.28
Foods	0.67	0.20	0.45	0.31	38.41	46.03	-6.52	23.95	19.05	2.65
Cereals	0.37	0.02	0.18	0.37	0.01	0.01	0.00	0.38	0.65	-0.17
Vegetable oils and oilseeds	0.81	0.28	0.55	0.24	30.85	36.55	-4.75	16.83	15.64	0.31
Other foods	0.52	0.12	0.44	0.33	7.55	9.46	-1.77	6.74	2.75	2.51
Agricultural raw materials	0.50	0.10	0.50	0.29	8.26	18.25	-6.52	1.70	0.59	0.62
Textile fibers	0.46	0.05	0.41	0.38	0.01	0.03	0.60	0.60	0.03	0.39
Other agricultural raw materials	0.50	0.10	0.50	0.29	8.25	18.22	-6.51	1.10	0.56	0.23
Other primary products	0.39	0.15	0.44	0.35	1.47	2.24	-0.63	-2.25	-4.97	1.57
Crude fertilizers	0.32	0.17	0.34	0.45	0.24	0.03	0.16	-0.26	0.03	-0.15
Mineral fuels	0.38	0.16	0.44	0.35	1.67	1.96	-0.31	-4.63	-5.24	0.12
Nonferrous metals	0.50	0.07	0.46	0.33	-0.44	0.25	-0.49	2.64	0.24	1.60
Manufactures	0.74	0.70	-1.17	1.90	224.87	238.37	-19.46	249.61	493.40	-185.60
Chemicals	1.61	1.14	0.03	0.75	39.35	44.65	-4.22	38.94	46.78	-7.02
Pharmaceuticals	3.55	2.68	0.64	0.15	4.90	5.15	-0.22	3.04	1.74	0.95
Toiletries and perfumes	1.48	1.03	-0.10	0.88	3.69	3.81	-0.03	3.12	4.20	-0.83
Manufactured fertilizers	1.98	1.43	0.73	0.06	4.20	4.82	-0.65	2.71	0.52	1.22
Other chemicals	1.43	0.99	-0.13	0.91	26.56	30.88	-3.32	30.07	40.32	-8.36
Iron and steel	1.05	0.56	0.45	0.28	11.83	12.50	-0.59	9.15	5.51	2.63
Machinery and equipment	0.79	0.77	-1.43	2.14	101.08	115.50	-11.79	118.41	273.19	-132.81
Nonelectric machinery	1.44	1.00	0.05	0.73	15.02	17.38	-1.92	14.49	17.94	-2.94
Electric machinery	0.71	0.75	-2.90	3.57	81.69	93.25	-9.71	97.84	247.71	-128.52
Transport equipment	1.03	0.63	0.10	0.61	4.37	4.86	-0.15	6.09	7.53	-1.36

(continued)

Table 21—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	0.43	0.52	-1.45	2.21	72.61	75.72	-2.87	83.10	167.93	-48.40
Leather and travel goods	0.02	1.38	-3.54	4.37	0.33	0.29	0.03	0.46	1.28	-0.24
Rubber products	0.48	0.22	-0.33	1.12	3.03	3.16	-0.08	3.34	4.16	-0.67
Wood products	0.60	0.10	0.38	0.41	3.02	3.45	-0.39	1.06	1.07	0.00
Paper products	-0.06	-0.23	-1.37	2.16	3.53	3.41	0.05	7.04	17.10	-6.73
Textile and clothing	0.46	0.90	-1.30	2.07	36.58	37.26	-0.64	34.10	54.74	-5.91
Nonmetal mineral products	-0.05	-0.26	-0.52	1.21	4.42	3.73	0.61	5.71	8.97	-2.53
Furniture	0.80	0.81	-1.35	2.16	1.61	1.89	-0.24	1.04	1.76	-0.62
Footwear	0.33	0.68	-0.73	1.55	0.62	0.60	0.02	0.58	0.85	-0.04
Professional equipment	0.34	0.57	0.05	0.74	1.12	1.04	0.06	2.58	3.42	-0.73
Other manufactures	0.92	1.14	-3.10	3.84	18.35	20.88	-2.28	27.20	74.58	-30.93
Nontraded goods	0.00	-0.41	0.00	-0.67	...	...	...	...	...	...
All goods	0.39	0.08	-0.18	0.11	273.01	314.88	-33.13	273.01	508.07	-180.76

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 22—Changes in production, consumption, and trade under Scenario 3: Malaysia

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	0.20	0.27	-1.29	2.01	535.82	715.80	-134.58	535.82	752.83	-167.02
Primary products	0.28	0.18	-0.46	1.20	323.11	468.48	-105.71	252.10	256.11	-5.64
Agriculture	0.26	0.15	-0.52	1.27	180.71	271.16	-62.92	138.48	146.84	-6.39
Foods	0.03	0.21	-0.98	1.72	103.63	118.46	-13.02	118.85	133.76	-10.13
Cereals	-0.50	-0.03	-2.02	4.04	0.18	0.18	0.00	11.38	14.54	-1.94
Vegetable oils and oilseeds	0.07	0.24	-0.21	0.96	29.70	37.29	-6.30	18.24	16.03	0.58
Other foods	0.00	0.19	-1.17	1.83	73.76	80.99	-6.72	89.23	103.18	-8.77
Agricultural raw materials	0.39	0.12	0.30	0.45	77.08	152.71	-49.90	19.63	13.09	3.74
Textile fibers	1.87	0.90	0.06	0.69	5.02	5.86	-0.14	4.14	0.51	2.50
Other agricultural raw materials	0.38	0.11	0.31	0.44	72.06	146.85	-49.75	15.50	12.57	1.24
Other primary products	0.31	0.24	-0.12	0.88	142.40	197.32	-42.79	113.62	109.27	0.75
Crude fertilizers	-0.22	-0.24	-0.35	1.11	1.60	2.43	-0.64	4.47	2.96	0.80
Mineral fuels	0.45	0.35	-0.12	0.88	135.46	188.37	-41.31	100.47	96.30	0.83
Nonferrous metals	-0.30	-0.17	-0.66	1.41	5.34	6.52	-0.83	8.67	10.00	-0.89
Manufactures	0.04	0.45	-1.97	2.68	212.71	247.32	-28.87	283.72	496.72	-161.38
Chemicals	0.83	1.03	-0.80	1.55	38.85	44.58	-4.55	42.72	47.00	-4.24
Pharmaceuticals	2.79	2.59	-0.21	0.97	4.91	5.16	-0.23	3.34	1.77	1.16
Toiletries and perfumes	0.71	0.92	-0.95	1.70	3.66	3.80	-0.03	3.42	4.25	-0.64
Manufactured fertilizers	1.18	1.31	-0.13	0.89	4.14	4.78	-0.68	3.12	0.59	1.41
Other chemicals	0.65	0.88	-0.95	1.70	26.14	30.83	-3.61	32.84	40.39	-6.17
Iron and steel	0.38	0.19	-0.30	1.00	11.36	12.24	-0.78	11.47	5.50	4.26
Machinery and equipment	0.06	0.54	-2.24	2.92	94.29	114.76	-16.74	138.19	275.11	-117.14
Nonelectric machinery	0.69	0.81	-0.81	1.56	14.51	17.15	-2.15	19.69	18.17	1.29
Electric machinery	-0.02	0.51	-3.71	4.35	75.58	92.75	-14.39	107.37	249.32	-121.72
Transport equipment	0.36	0.42	-0.67	1.35	4.21	4.86	-0.20	11.12	7.62	3.29

(continued)

Table 22—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	-0.21	0.23	-2.24	2.98	68.21	75.74	-6.80	91.35	169.05	-44.27
Leather and travel goods	-0.66	1.37	-4.40	5.20	0.36	0.35	0.01	0.50	1.29	-0.24
Rubber products	-0.30	0.12	-1.13	1.89	2.84	3.13	-0.18	3.53	4.18	-0.53
Wood products	0.13	-0.19	-0.10	0.86	2.88	4.10	-1.13	1.14	1.09	0.02
Paper products	-0.57	-0.66	-2.10	2.85	3.32	3.30	0.01	8.36	17.24	-5.94
Textile and clothing	-0.22	0.63	-2.09	2.83	35.00	37.52	-2.35	36.63	55.07	-5.27
Nonmetal mineral products	-0.65	-0.66	-1.17	1.80	3.33	3.10	0.22	6.66	9.18	-1.95
Furniture	0.05	0.59	-2.17	2.96	1.52	1.89	-0.32	1.11	1.77	-0.56
Footwear	-0.30	0.37	-1.49	2.29	0.53	0.60	-0.06	0.71	0.86	-0.02
Professional equipment	-0.38	0.29	-0.81	1.57	0.84	0.99	-0.12	3.64	3.45	0.17
Other manufactures	0.18	0.87	-3.94	4.64	17.58	20.77	-2.88	29.08	74.93	-29.93
Nontraded goods	0.00	-0.38	0.00	-0.60	...	...	...	...	...	...
All goods	0.13	0.05	-0.54	0.50	535.82	715.80	-134.58	535.82	752.83	-167.02

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 23—Changes in production, consumption, and trade under Scenario 4: Malaysia

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	8.48	3.32	2.18	3.39	1,263.46	528.86	585.82	1,263.46	437.70	554.51
Primary products	8.85	3.15	6.39	-0.66	786.28	319.13	358.90	454.93	250.44	116.07
Agriculture	8.86	2.75	5.99	-0.27	475.30	174.16	234.07	321.00	175.30	85.96
Foods	7.91	1.92	4.22	1.47	226.92	120.37	96.92	283.02	152.96	79.59
Cereals	6.83	1.47	1.50	7.05	0.09	0.08	0.00	17.64	19.91	-1.39
Vegetable oils and oilseeds	8.99	2.40	8.33	-2.54	62.45	28.95	28.98	35.85	29.84	1.59
Other foods	6.83	1.43	3.03	2.46	164.37	91.34	67.94	229.53	103.22	79.40
Agricultural raw materials	9.37	3.21	9.19	-3.43	248.39	53.79	137.15	37.98	22.34	6.37
Textile fibers	9.85	3.10	9.28	-3.50	2.82	2.12	0.12	1.07	2.16	-0.75
Other agricultural raw materials	9.37	3.21	9.19	3.43	245.56	51.67	137.02	36.91	20.17	7.12
Other primary products	8.84	3.98	8.31	-2.52	310.98	144.97	124.83	133.93	75.14	30.11
Crude fertilizers	7.83	4.73	7.75	-1.84	16.08	3.69	9.56	5.17	2.49	1.43
Mineral fuels	8.92	4.23	8.32	-2.53	270.42	133.32	103.56	85.47	66.66	3.76
Nonferrous metals	9.16	1.31	7.45	-1.66	24.48	7.96	11.72	43.29	6.00	24.92
Manufactures	7.69	3.67	-1.29	6.74	477.17	209.73	226.92	808.53	187.26	438.44
Chemicals	7.95	2.91	4.71	1.06	49.54	30.48	14.64	66.63	23.20	37.57
Pharmaceuticals	10.68	5.09	8.50	-2.71	4.41	4.33	0.08	1.42	1.68	-0.19
Toiletries and perfumes	7.41	2.48	4.05	1.73	4.57	4.09	0.11	4.94	3.88	0.81
Manufactured fertilizers	9.26	3.96	9.69	-3.90	2.15	1.19	1.01	-3.75	4.50	-4.60
Other chemicals	7.63	2.65	3.63	2.14	38.41	20.88	13.43	64.02	13.13	41.55
Iron and steel	7.35	1.32	5.15	0.75	15.19	10.67	4.02	23.94	5.51	13.31
Machinery and equipment	8.89	4.67	-2.54	7.81	214.63	93.04	99.06	396.51	82.33	274.78
Nonelectric machinery	9.81	4.15	4.70	1.03	18.23	13.61	3.75	36.66	3.69	28.04
Electric machinery	8.90	4.81	-6.13	11.22	188.43	75.81	93.98	287.25	75.46	181.62
Transport equipment	6.25	2.66	-3.27	8.40	7.97	3.62	1.32	72.59	3.18	65.13

(continued)

Table 23—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	5.80	2.60	-2.47	8.14	197.81	75.54	109.21	321.45	76.22	112.78
Leather and travel goods	5.14	6.42	-9.26	15.18	0.64	0.07	0.47	1.41	0.50	0.27
Rubber products	5.50	0.95	-0.31	6.11	13.12	3.47	6.11	22.81	2.95	16.23
Wood products	8.40	0.88	7.77	-1.98	0.94	-4.12	5.74	2.67	0.88	0.66
Paper products	2.94	-1.89	-1.70	7.48	6.37	4.09	1.06	7.97	7.21	0.51
Textile and clothing	5.26	4.51	-4.42	10.13	100.97	38.85	57.99	174.55	34.45	40.07
Nonmetal mineral products	3.10	-1.54	0.41	4.80	22.53	9.26	12.07	23.53	6.82	12.96
Furniture	7.35	3.43	-7.23	13.14	4.81	1.75	2.60	6.74	0.87	5.04
Footwear	6.36	5.03	-5.23	11.22	3.51	1.49	1.75	5.52	0.51	0.73
Professional equipment	8.61	5.72	5.38	0.40	6.00	1.40	3.71	4.77	0.62	3.65
Other manufactures	7.73	4.67	-5.67	11.21	38.93	19.28	17.70	71.48	21.42	32.68
Nontraded goods	0.00	-5.91	0.00	-8.95	...	...	...	...	...	...
All goods	5.63	0.21	0.92	-3.75	1,263.46	528.86	585.82	1,263.46	437.70	554.51

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 24—Changes in production, consumption, and trade under Scenario 1: The Philippines

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	0.31	0.24	-0.21	0.16	69.91	55.62	13.95	69.91	103.25	-19.95
Primary products	0.31	0.12	0.17	-0.08	12.12	1.16	10.38	9.34	11.70	-1.25
Agriculture	0.27	0.10	0.16	-0.08	10.89	1.07	9.33	9.25	11.68	-1.54
Foods	0.25	0.08	0.12	-0.05	9.76	1.03	8.43	10.10	11.76	-1.03
Cereals	0.41	0.13	0.03	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Vegetable oils and oilseeds	-0.13	-0.13	-0.81	0.46	6.27	0.80	5.33	11.43	11.83	-0.21
Other foods	0.36	0.14	0.31	-0.16	3.49	0.22	3.10	-1.33	-0.08	-0.83
Agricultural raw materials	0.32	0.15	0.34	-0.20	1.13	0.05	0.90	-0.85	-0.08	-0.50
Textile fibers	0.38	0.20	0.43	-0.29	0.09	0.00	0.07	-0.36	0.00	-0.19
Other agricultural raw materials	0.31	0.14	0.31	-0.17	1.05	0.05	0.83	-0.49	-0.08	-0.31
Other primary products	0.41	0.19	0.25	-0.15	1.23	0.09	1.04	0.09	0.03	0.29
Crude fertilizers	0.35	0.27	0.37	-0.23	1.13	0.01	1.02	-0.34	-0.02	-0.10
Mineral fuels	0.44	0.08	0.22	-0.13	0.14	0.01	0.06	-0.18	-0.03	-0.02
Nonferrous metals	0.49	0.17	0.48	-0.34	-0.03	0.08	-0.03	0.62	0.08	0.40
Manufactures	0.31	0.39	-0.68	0.46	57.79	54.46	3.57	60.57	91.55	-18.70
Chemicals	0.00	0.39	-1.97	1.44	16.68	15.87	0.85	32.48	50.58	-13.85
Pharmaceuticals	1.61	1.68	-0.72	0.52	0.98	1.00	-0.01	1.29	1.35	-0.05
Toiletries and perfumes	1.03	1.21	-0.18	0.15	1.08	1.15	-0.04	0.72	1.30	-0.44
Manufactured fertilizers	-0.39	0.08	-3.59	1.78	4.45	4.69	0.04	7.78	7.78	0.00
Other chemicals	0.01	0.40	-1.88	1.55	10.16	9.03	0.86	22.69	40.14	-13.36
Iron and steel	0.42	0.13	0.40	-0.27	0.06	0.00	0.05	-0.06	-0.02	-0.02
Machinery and equipment	0.95	0.81	-0.66	0.33	26.50	33.45	-6.12	9.27	9.71	-0.34
Nonelectric machinery	0.36	0.28	0.06	-0.04	0.56	0.43	0.11	0.08	0.05	0.03
Electric machinery	1.10	0.96	-1.93	1.00	25.74	32.82	-6.22	9.46	9.67	-0.17
Transport equipment	0.47	0.26	0.18	-0.13	0.20	0.20	0.00	-0.27	-0.01	-0.20

(continued)

Table 24—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	0.04	0.21	-0.18	0.22	14.54	5.14	8.79	18.88	31.27	-4.49
Leather and travel goods	0.40	0.35	-0.06	0.08	0.19	0.16	0.02	0.10	0.20	-0.03
Rubber products	-0.47	0.01	-2.11	1.69	0.26	0.18	0.06	0.95	2.30	-1.05
Wood products	0.29	0.13	0.30	-0.16	0.25	0.01	0.28	-0.01	0.00	-0.01
Paper products	0.00	0.13	-0.54	0.41	0.19	0.16	0.03	0.61	1.27	-0.51
Textile and clothing	0.01	0.27	-0.40	0.43	9.27	3.56	5.51	12.82	20.22	-0.95
Nonmetal mineral products	-1.02	-0.89	-2.16	1.62	2.24	0.91	0.98	4.64	7.19	-1.79
Furniture	0.33	0.35	-0.06	-0.14	0.66	0.06	0.59	0.11	0.13	-0.01
Footwear	0.25	0.45	0.26	-0.11	0.29	0.01	0.27	-0.01	0.00	0.00
Professional equipment	0.28	0.39	0.40	-0.28	0.25	0.03	0.20	0.02	-0.01	0.02
Other manufactures	0.32	0.43	0.34	-0.23	0.93	0.05	0.84	-0.34	-0.02	-0.16
Nontraded goods	0.00	-0.07	0.00	-0.09	...	...	...	...	...	...
All goods	0.11	0.04	-0.04	-0.04	69.91	55.62	13.95	69.91	103.25	-19.95

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 25—Changes in production, consumption, and trade under Scenario 2: The Philippines

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	-0.01	0.23	-0.80	0.66	104.31	113.27	-6.27	104.31	140.70	-21.47
Primary products	-0.12	-0.06	-0.20	0.26	1.01	1.13	0.67	15.03	12.31	1.86
Agriculture	-0.13	-0.09	-0.21	0.26	1.91	1.08	0.96	13.16	11.98	0.81
Foods	-0.17	-0.09	-0.25	0.28	2.65	1.04	1.61	12.55	11.97	0.42
Cereals	-0.10	-0.06	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Vegetable oils and oilseeds	-0.52	-0.31	-1.21	0.87	4.35	0.81	3.44	11.60	11.90	-0.16
Other foods	-0.07	-0.03	-0.07	0.17	-1.70	0.22	-1.82	0.95	0.07	0.58
Agricultural raw materials	-0.02	-0.09	-0.05	0.19	-0.74	0.04	-0.65	0.61	0.01	0.39
Textile fibers	-0.06	-0.14	-0.11	0.26	-0.06	0.00	-0.05	0.30	0.00	0.16
Other agricultural raw materials	-0.02	-0.08	-0.03	0.17	-0.68	0.04	-0.60	0.31	0.01	0.23
Other primary products	-0.10	0.03	-0.08	0.17	-0.90	0.05	-0.30	1.87	0.33	1.05
Crude fertilizers	-0.14	0.02	-0.14	0.29	0.05	0.00	0.05	0.09	0.09	0.00
Mineral fuels	-0.13	0.03	-0.06	0.14	0.01	0.01	-0.04	0.19	0.03	0.02
Nonferrous metals	0.01	0.05	-0.04	0.19	-0.97	0.04	-0.31	1.58	0.21	1.03
Manufactures	0.13	0.57	-1.54	1.16	103.30	112.13	-6.94	89.28	128.39	-23.33
Chemicals	-0.49	0.25	-2.29	1.74	16.37	15.81	0.63	33.65	50.66	-13.02
Pharmaceuticals	1.11	1.53	-0.80	0.58	0.98	0.99	-0.01	1.30	1.35	-0.04
Toiletries and perfumes	0.53	1.06	-0.68	0.66	1.07	1.14	-0.05	0.82	1.31	-0.37
Manufactured fertilizers	-0.86	-0.05	-3.81	1.93	4.42	4.63	0.03	7.75	7.75	0.00
Other chemicals	-0.48	0.25	-2.24	1.91	9.91	9.05	0.65	23.77	40.25	-12.61
Iron and steel	-0.26	0.08	-0.50	0.60	1.83	1.67	0.14	3.87	7.10	-1.38
Machinery and equipment	1.53	1.83	-1.67	1.05	70.38	84.65	-11.94	25.05	26.80	-1.40
Nonelectric machinery	6.56	4.61	-1.99	1.38	40.33	48.19	-6.29	13.23	14.06	-0.69
Electric machinery	0.39	1.21	-2.01	1.09	27.54	33.47	-5.21	9.57	9.71	-0.11
Transport equipment	1.35	1.29	-0.50	0.37	2.51	2.99	-0.43	2.25	3.02	-0.60

(continued)

Table 25—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	-0.41	0.06	-1.11	1.08	14.71	10.01	4.24	26.72	43.83	-7.53
Leather and travel goods	-0.08	0.16	-0.50	0.52	0.15	0.17	-0.02	0.14	0.20	-0.02
Rubber products	-0.97	-0.14	-2.47	2.04	0.25	0.18	0.05	1.01	2.31	-1.01
Wood products	-0.08	0.00	-0.12	0.27	-0.01	0.07	-0.10	0.12	0.11	0.00
Paper products	-0.44	-0.04	-0.84	0.70	0.18	0.16	0.02	0.71	1.27	-0.44
Textile and clothing	-0.46	0.08	-0.89	0.94	7.63	3.56	3.93	13.89	20.29	-0.82
Nonmetal mineral products	-1.46	-1.04	-2.60	2.04	2.07	0.90	0.87	4.87	7.25	-1.67
Furniture	-0.18	0.12	-0.54	0.36	0.27	0.07	0.20	0.12	0.13	-0.01
Footwear	-0.18	0.31	-0.43	0.43	0.31	0.26	0.05	0.14	0.14	0.00
Professional equipment	-0.23	0.89	-1.62	1.66	1.14	1.02	0.10	1.59	2.55	-0.80
Other manufactures	0.02	0.36	-1.94	1.73	2.73	3.62	-0.86	4.14	9.59	-2.77
Nontraded goods	0.00	-0.03	0.00	-0.04	...	...	...	...	...	...
All goods	0.00	0.06	-0.16	0.10	104.31	113.27	-6.27	104.31	140.70	-21.47

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 26—Changes in production, consumption, and trade under Scenario 3: The Philippines

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	0.79	0.56	-0.47	0.27	170.57	127.62	36.75	170.57	261.75	-42.60
Primary products	0.45	0.27	-0.08	-0.04	56.99	14.57	34.89	89.81	133.99	-15.05
Agriculture	0.56	0.17	0.08	-0.22	35.00	8.38	24.90	31.70	44.15	-8.18
Foods	0.57	0.18	0.00	-0.22	29.50	7.14	21.39	26.76	35.85	-5.92
Cereals	1.10	0.26	0.06	-0.04	0.09	0.09	0.00	0.05	0.05	0.00
Vegetable oils and oilseeds	0.40	0.02	-0.28	0.12	7.82	0.93	6.72	11.15	11.62	-0.24
Other foods	0.61	0.22	0.05	-0.29	21.59	6.13	14.67	15.56	24.18	-5.67
Agricultural raw materials	0.54	0.14	0.47	-0.23	5.49	1.24	3.51	4.93	8.30	-2.27
Textile fibers	0.96	0.34	0.99	-0.67	0.41	0.23	0.15	-0.49	0.80	-0.69
Other agricultural raw materials	0.50	0.12	0.32	-0.11	5.09	1.00	3.37	5.42	7.50	-1.57
Other primary products	0.18	0.53	-2.03	2.00	22.00	6.19	9.99	58.11	89.84	-6.86
Crude fertilizers	0.55	0.56	0.17	0.07	6.40	0.58	5.28	6.57	11.03	-1.35
Mineral fuels	-0.84	0.51	-2.58	2.48	9.10	2.28	3.74	41.93	65.13	-2.47
Nonferrous metals	0.71	0.50	-0.05	0.37	6.50	3.34	0.96	9.61	13.68	-3.05
Manufactures	1.19	0.92	-0.95	0.67	113.58	113.06	1.85	80.76	127.76	-27.55
Chemicals	0.58	0.62	-1.60	1.20	16.96	15.95	1.04	32.26	50.46	-13.93
Pharmaceuticals	2.20	1.92	-0.63	0.47	0.99	1.00	-0.01	1.29	1.36	-0.05
Toiletries and perfumes	1.62	1.46	0.40	-0.26	1.12	1.17	-0.03	0.70	1.30	-0.46
Manufactured fertilizers	0.15	0.28	-3.34	1.68	4.46	4.75	0.05	7.76	7.76	0.00
Other chemicals	0.60	0.64	-1.46	1.27	10.39	9.03	1.04	22.51	40.04	-13.41
Iron and steel	0.79	0.50	0.54	-0.27	2.13	1.68	0.38	2.52	7.03	-1.93
Machinery and equipment	2.68	2.08	-1.44	0.86	72.82	85.26	-10.36	23.67	26.81	-2.51
Nonelectric machinery	7.68	4.78	-1.82	1.23	40.42	48.08	-6.14	12.78	14.06	-1.06
Electric machinery	1.55	1.47	-1.87	0.99	29.66	34.02	-3.84	9.54	9.75	-0.16
Transport equipment	2.44	1.74	-0.01	-0.04	2.74	3.16	-0.38	1.34	3.00	-1.28

(continued)

Table 26—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	0.61	0.45	-0.12	0.25	21.67	10.16	10.79	22.31	43.46	-9.19
Leather and travel goods	1.00	0.47	0.47	-0.29	0.22	0.17	0.05	0.07	0.20	-0.04
Rubber products	0.13	0.26	-1.70	1.40	0.27	0.18	0.06	0.94	2.30	-1.06
Wood products	0.72	0.31	0.69	-0.38	0.67	0.08	0.69	0.09	0.11	-0.02
Paper products	0.52	0.39	-0.18	0.18	0.21	0.17	0.04	0.57	1.27	-0.54
Textile and clothing	0.60	0.41	0.18	0.03	10.51	3.60	6.66	12.04	20.16	-1.04
Nonmetal mineral products	-0.80	-0.34	-1.89	1.57	2.66	0.92	1.29	4.24	7.15	-2.04
Furniture	0.90	0.63	0.48	-0.51	1.11	0.07	1.03	0.10	0.13	-0.01
Footwear	0.89	0.59	0.63	-0.44	0.60	0.27	0.32	0.11	0.14	0.00
Professional equipment	0.90	1.18	-0.54	0.71	1.33	1.03	0.27	1.14	2.51	-1.14
Other manufactures	1.08	0.97	-1.00	0.92	4.09	3.67	0.40	3.01	9.50	-3.30
Nontraded goods	0.00	-0.14	0.00	-0.18	...	...	...	...	...	...
All goods	0.27	0.11	-0.09	-0.09	170.57	127.62	36.75	170.57	261.75	-42.60

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 27—Changes in production, consumption, and trade under Scenario 4: The Philippines

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	21.40	10.52	1.25	-3.49	1,437.61	96.46	1,201.26	1,437.61	141.53	729.59
Primary products	20.71	9.62	9.29	-10.51	881.31	24.11	750.44	609.50	76.22	261.61
Agriculture	19.60	8.73	10.05	-11.49	673.23	14.44	617.25	288.33	23.08	192.71
Foods	20.09	8.87	8.63	-11.37	556.51	12.35	521.23	257.91	19.19	174.69
Cereals	4.63	8.78	-59.95	23.15	-0.80	0.17	0.17	53.13	0.03	53.05
Vegetable oils and oilseeds	22.53	10.91	21.35	-17.11	112.93	2.01	108.84	10.07	5.91	2.14
Other foods	19.49	8.27	9.16	-11.77	444.38	10.17	412.22	194.71	13.25	119.49
Agricultural raw materials	18.25	8.36	16.43	-12.01	116.72	2.09	96.02	30.42	3.90	18.02
Textile fibers	18.14	8.15	14.54	-9.89	14.86	0.12	12.52	9.77	0.41	5.03
Other agricultural raw materials	18.26	8.28	16.98	-12.63	101.86	1.97	83.50	20.65	3.48	12.99
Other primary products	23.53	11.87	0.37	0.87	208.08	9.67	133.19	321.16	53.14	68.90
Crude fertilizers	24.37	15.83	21.47	-17.10	99.78	0.65	90.24	39.39	7.40	9.65
Mineral fuels	18.85	6.91	-4.95	5.40	51.49	2.88	27.68	219.52	36.53	19.47
Nonferrous metals	27.44	10.59	22.90	-18.08	56.81	6.14	15.27	62.25	9.21	39.78
Manufactures	22.21	11.59	-8.85	5.32	556.30	72.35	450.82	828.11	65.30	467.98
Chemicals	18.80	8.68	-1.60	2.69	48.43	15.15	30.20	178.89	22.63	109.24
Pharmaceuticals	20.39	9.95	-17.74	19.29	1.12	0.93	0.14	27.83	1.04	21.15
Toiletries and perfumes	17.06	7.29	4.84	-2.65	3.88	1.90	1.30	6.44	0.42	4.57
Manufactured fertilizers	16.57	6.90	-7.28	6.96	1.93	7.12	0.78	29.94	5.50	7.75
Other chemicals	19.72	9.42	1.10	0.17	41.50	5.21	27.97	114.67	15.66	75.77
Iron and steel	18.96	6.39	13.43	-9.32	20.57	1.13	16.76	28.47	2.53	11.08
Machinery and equipment	25.96	15.06	-27.42	17.35	163.38	46.66	101.81	375.19	20.71	285.63
Nonelectric machinery	27.70	12.94	-27.63	19.78	25.90	17.65	6.61	163.78	10.91	126.60
Electric machinery	25.71	15.65	-34.33	18.44	127.94	23.44	91.61	157.05	8.64	118.01
Transport equipment	22.44	12.61	-15.12	10.95	9.54	5.58	3.59	54.36	1.16	41.02

(continued)

Table 27—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	21.35	11.01	9.85	-7.82	323.92	9.41	302.05	245.57	19.44	62.02
Leather and travel goods	23.04	12.99	2.17	-2.96	4.03	0.12	3.57	3.56	0.08	1.12
Rubber products	17.23	7.43	-6.44	4.02	2.15	0.66	1.05	7.35	0.82	5.07
Wood products	21.54	8.14	21.07	-16.41	17.79	0.07	20.85	0.82	0.06	0.57
Paper products	8.18	4.34	-14.31	8.94	1.96	0.27	1.50	18.33	0.44	13.91
Textile and clothing	20.65	10.10	13.94	-10.83	176.81	3.56	167.08	173.50	12.06	20.65
Nonmetal mineral products	13.54	5.81	7.44	-5.38	19.96	1.30	13.90	12.81	3.60	6.48
Furniture	28.25	15.81	20.93	-21.42	26.96	0.07	26.68	1.28	0.09	0.58
Footwear	25.33	14.29	22.14	-18.48	12.05	0.28	11.36	0.93	0.08	0.07
Professional equipment	24.50	18.36	8.15	-5.50	12.61	0.75	10.81	3.26	0.28	2.48
Other manufactures	26.55	18.06	-4.02	3.00	49.60	2.32	45.25	23.72	1.93	11.08
Nontraded goods	0.00	-3.53	0.00	-4.38	...	...	...	...	...	...
All goods	7.46	1.37	0.25	-4.20	1,437.61	96.46	1,201.26	1,437.61	141.53	729.59

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 28—Changes in production, consumption, and trade under Scenario 1: Singapore

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	rice	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	-0.65	0.22	-1.21	2.13	426.64	594.97	-96.68	426.64	179.03	179.65
Primary products	-1.07	-0.36	-1.07	1.90	-13.51	9.11	-10.66	58.35	27.51	12.36
Agriculture	-0.95	-0.21	-1.03	1.83	3.62	14.08	-3.38	48.14	25.43	9.89
Foods	-0.91	-0.01	-1.02	1.82	12.24	14.22	-1.89	30.23	11.91	8.63
Cereals	-1.16	-0.23	-0.95	1.60	-0.02	0.00	0.00	0.86	0.46	0.20
Vegetable oils and oilseeds	1.23	1.20	-0.73	1.86	16.23	14.50	-0.72	8.48	4.28	0.91
Other foods	-1.19	-0.17	-1.06	1.83	-3.97	-0.28	-1.17	20.89	7.17	7.51
Agricultural raw materials	-1.00	-0.46	-1.03	1.83	-8.62	-0.14	-1.48	17.91	13.52	1.26
Textile fibers	-1.07	-0.53	-1.12	1.93	-0.13	-0.01	0.00	0.69	0.03	0.32
Other agricultural raw materials	-1.00	-0.46	-1.03	1.83	-8.49	-0.13	-1.48	17.22	13.50	0.95
Other primary products	-1.16	-0.47	-1.31	2.25	-17.13	-4.97	-7.28	10.20	2.08	2.47
Crude fertilizers	-1.34	-0.02	-1.30	2.23	-0.03	-0.04	0.00	-0.02	0.05	-0.03
Mineral fuels	-1.13	-0.57	-1.30	2.24	-16.95	-5.10	-7.25	6.42	1.75	0.30
Nonferrous metals	-1.31	-0.01	-1.33	2.28	-0.15	0.16	-0.03	3.80	0.28	2.20
Manufactures	-0.50	0.43	-1.28	2.26	440.15	585.86	-86.02	368.29	151.51	167.29
Chemicals	1.46	1.87	-0.54	1.16	165.28	217.50	-19.93	61.24	24.96	27.88
Pharmaceuticals	-0.66	0.17	-0.99	2.58	1.88	4.25	-2.28	6.02	5.83	0.14
Toiletries and perfumes	0.30	0.94	-1.01	2.22	6.26	8.92	-0.64	7.19	4.08	2.52
Manufactured fertilizers	-0.47	0.32	-1.16	2.10	0.74	0.98	0.00	0.88	-0.02	0.82
Other chemicals	1.84	2.17	-0.43	0.90	156.41	203.34	-17.01	47.15	15.07	24.40
Iron and steel	-1.11	-0.38	-1.29	2.24	-0.82	-0.03	-0.30	4.74	0.29	3.18
Machinery and equipment	-0.66	0.30	-1.26	2.25	221.10	294.80	-57.60	213.12	82.25	106.78
Nonelectric machinery	-1.21	-0.11	-1.30	2.25	-7.59	-0.28	-6.51	42.03	4.83	31.76
Electric machinery	-0.14	0.70	-1.21	2.28	230.12	295.07	-50.60	151.99	76.93	59.88
Transport equipment	-1.16	-0.22	-1.29	2.22	-1.44	0.01	-0.49	19.09	0.48	15.14

(continued)

Table 28—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	-0.84	0.29	-1.44	2.45	54.59	73.59	-8.20	89.19	44.02	29.45
Leather and travel goods	-0.73	0.05	-1.36	2.32	0.49	0.71	-0.05	3.84	0.58	1.80
Rubber products	0.38	1.00	-1.16	2.11	4.54	6.97	-1.01	3.85	0.45	2.74
Wood products	-0.92	-0.41	-1.12	2.07	-0.75	-0.01	-0.48	1.91	1.57	0.16
Paper products	0.70	0.82	-0.78	1.73	14.46	16.44	-0.39	10.16	1.36	5.15
Textile and clothing	-0.73	0.66	-1.74	2.86	27.56	37.84	-4.68	40.10	34.43	1.58
Nonmetal mineral products	-0.37	0.82	-1.18	2.14	8.10	9.82	-0.64	5.13	1.44	2.33
Furniture	-1.13	0.21	-1.83	2.79	0.89	1.48	-0.49	1.16	1.83	-0.41
Footwear	-1.32	0.12	-1.36	2.31	-0.01	0.00	0.00	1.58	0.46	0.43
Professional equipment	-1.17	-0.16	-1.32	2.28	-0.93	-0.01	-0.42	9.14	0.42	7.69
Other manufactures	-1.34	0.05	-1.27	2.18	0.25	0.28	-0.02	12.32	1.47	7.99
Nontraded goods	0.00	-0.01	0.00	-0.01	...	...	...	...	...	...
All goods	-0.52	0.17	-0.73	1.29	426.64	594.97	-96.68	426.64	179.03	179.65

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 29—Changes in production, consumption, and trade under Scenario 2: Singapore

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	-1.27	0.29	-2.13	3.61	679.57	1,002.45	-207.36	679.57	226.34	330.52
Primary products	-2.02	-0.64	-1.98	3.32	-35.44	4.77	-18.23	95.51	44.50	20.77
Agriculture	-1.88	-0.40	-1.91	3.20	-4.93	13.68	-5.23	79.24	42.24	16.49
Foods	-1.90	-0.12	-1.91	3.20	9.61	13.91	-2.73	48.01	18.65	14.29
Cereals	-2.16	-0.38	-1.81	2.88	-0.04	0.00	0.00	1.25	0.87	0.19
Vegetable oils and oilseeds	0.35	1.12	-1.73	3.44	16.40	14.54	-0.78	10.72	5.34	1.17
Other foods	-2.19	-0.28	-1.93	3.19	-6.76	-0.63	-1.95	36.04	12.43	12.93
Agricultural raw materials	-1.86	-0.76	-1.90	3.20	-14.55	-0.23	-2.51	31.23	23.60	2.20
Textile fibers	-1.98	-0.90	-2.04	3.36	-0.23	-0.01	0.00	1.21	0.05	0.56
Other agricultural raw materials	-1.86	-0.76	-1.90	3.19	-14.32	-0.22	-2.50	30.02	23.55	1.64
Other primary products	-2.13	-0.83	-2.37	3.91	-30.51	-8.91	-13.00	16.28	2.26	4.28
Crude fertilizers	-2.43	-0.03	-2.36	3.88	-0.04	-0.04	0.00	-0.07	0.06	-0.05
Mineral fuels	-2.07	-1.00	-2.36	3.89	-30.24	-9.20	-12.95	9.82	1.79	0.52
Nonferrous metals	-2.39	-0.02	-2.42	3.98	-0.23	0.33	-0.05	6.53	0.41	3.82
Manufactures	-1.00	0.64	-2.21	3.76	715.01	997.68	-189.13	584.06	181.84	309.75
Chemicals	0.47	1.70	-1.15	2.12	163.14	217.27	-20.76	63.42	25.08	29.46
Pharmaceuticals	-1.67	-0.02	-1.25	2.97	1.59	4.24	-2.55	6.04	5.83	0.15
Toiletries and perfumes	-0.70	0.76	-1.68	3.26	6.09	8.90	-0.68	7.43	4.11	2.69
Manufactured fertilizers	-1.45	0.16	-2.23	3.77	0.71	0.98	-0.00	0.96	-0.02	0.89
Other chemicals	0.85	2.00	-1.06	1.87	154.76	203.14	-17.53	48.99	15.16	25.73
Iron and steel	-1.45	-0.12	-2.19	3.75	9.16	12.58	-1.29	14.06	0.10	10.00
Machinery and equipment	-1.16	0.45	-2.18	3.76	391.87	540.58	-119.82	334.17	96.22	195.84
Nonelectric machinery	-1.20	0.36	-2.07	3.63	154.12	222.32	-60.80	104.17	7.34	82.66
Electric machinery	-1.10	0.55	-2.18	3.79	222.04	294.24	-56.20	187.48	84.83	81.90
Transport equipment	-1.40	0.21	-2.33	3.85	15.71	24.02	-2.82	42.52	4.06	31.27

(continued)

Table 29—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	-1.10	0.87	-2.45	4.05	150.84	227.25	-47.26	172.41	60.44	74.45
Leather and travel goods	-1.65	-0.09	-2.46	4.02	0.43	0.71	-0.07	6.54	0.92	3.11
Rubber products	-0.63	0.82	-2.25	3.80	4.40	6.96	-1.06	4.14	0.48	2.94
Wood products	-1.62	-0.59	-2.02	3.58	-0.34	1.11	-0.92	3.53	2.91	0.29
Paper products	-0.10	0.46	-1.78	3.34	14.02	16.30	-0.45	12.21	1.56	6.23
Textile and clothing	-1.75	0.55	-2.74	4.42	26.15	37.80	-5.29	51.80	37.26	4.04
Nonmetal mineral products	-1.41	0.78	-2.27	3.83	7.96	9.84	-0.68	6.58	1.78	3.04
Furniture	-2.15	0.15	-2.90	4.47	0.69	1.48	-0.66	3.51	2.46	0.64
Footwear	-1.98	0.42	-2.43	4.00	0.44	0.67	-0.04	2.43	0.70	0.65
Professional equipment	-1.49	0.31	-2.31	3.87	14.11	19.43	-2.46	17.73	0.73	15.00
Other manufactures	0.09	2.43	-2.27	3.81	82.99	132.95	-35.64	63.93	11.63	38.51
Nontraded goods	0.00	0.18	0.00	0.32	...	...	...	...	...	...
All goods	-1.01	0.27	-1.29	2.31	679.57	1,002.45	-207.36	679.57	226.34	330.52

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 30—Changes in production, consumption, and trade under Scenario 3: Singapore

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	-1.54	0.36	-2.92	5.22	992.64	1,520.19	-314.36	992.64	418.16	377.52
Primary products	-1.26	0.12	-2.98	5.79	299.97	523.77	-111.44	369.44	233.87	42.83
Agriculture	-1.93	-0.25	-2.98	5.92	45.22	100.83	-15.18	231.99	168.11	29.50
Foods	-1.80	0.29	-2.87	5.61	55.56	83.93	-10.46	143.40	92.05	25.93
Cereals	-2.98	-0.15	-3.80	7.34	-0.01	0.01	0.00	8.31	7.27	0.52
Vegetable oils and oilseeds	-0.24	1.03	-2.38	4.61	16.31	14.33	-0.82	12.53	6.04	1.41
Other foods	-1.99	0.20	-2.89	5.65	39.26	69.59	-9.63	122.56	78.74	24.00
Agricultural raw materials	-2.10	-0.93	-3.11	6.35	-10.34	16.90	-4.72	88.58	76.05	3.57
Textile fibers	-1.81	-0.88	-2.59	4.46	0.23	0.87	-0.01	1.74	0.05	0.81
Other agricultural raw materials	-2.10	-0.93	-3.13	6.41	-10.57	16.03	-4.71	86.84	76.01	2.76
Other primary products	-0.74	0.41	-3.03	5.12	254.75	422.94	-96.26	137.46	65.76	13.33
Crude fertilizers	-0.12	1.97	-2.33	4.43	16.61	22.94	-3.34	7.12	1.94	2.20
Mineral fuels	-0.50	0.32	-3.01	5.09	225.94	378.22	-92.08	116.95	62.67	3.49
Nonferrous metals	-2.43	0.47	-3.11	5.21	12.21	21.78	-0.85	13.39	1.15	7.64
Manufactures	-1.64	0.45	-2.88	4.92	692.67	996.42	-202.92	623.19	184.29	334.69
Chemicals	-0.16	1.47	-1.57	2.82	160.52	217.07	-21.82	64.50	25.11	30.28
Pharmaceuticals	-2.32	-0.26	-1.42	3.24	1.23	4.24	-2.90	6.06	5.84	0.16
Toiletries and perfumes	-1.33	0.53	-2.13	4.04	5.88	8.88	-0.72	7.54	4.11	2.78
Manufactured fertilizers	-2.07	-0.06	-2.96	5.02	0.68	0.99	0.00	1.00	-0.02	0.93
Other chemicals	0.22	1.77	-1.48	2.59	152.74	202.95	-18.19	49.90	15.17	26.41
Iron and steel	-2.00	-0.52	-2.89	4.98	8.42	12.55	-1.55	16.64	-0.01	11.92
Machinery and equipment	-1.81	0.28	-2.87	4.95	378.72	539.80	-129.39	353.40	96.85	211.01
Nonelectric machinery	-1.87	0.21	-2.80	4.89	148.23	221.13	-64.98	108.19	7.68	85.80
Electric machinery	-1.74	0.38	-2.82	4.91	216.01	294.57	-61.15	194.42	84.89	87.39
Transport equipment	-1.99	-0.04	-3.05	5.09	14.48	24.10	-3.26	50.79	4.27	37.83

(continued)

Table 30—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	-1.70	0.64	-3.12	5.24	145.00	226.99	-50.16	188.66	62.34	81.49
Leather and travel goods	-2.18	-0.34	-3.20	5.31	0.34	0.71	-0.08	8.52	1.16	4.07
Rubber products	-1.27	0.58	-2.98	5.07	4.24	6.95	-1.12	4.25	0.48	3.04
Wood products	-1.95	-1.06	-2.41	4.50	-1.04	1.12	-1.40	4.49	3.62	0.41
Paper products	-0.43	-0.17	-2.39	4.48	13.55	16.24	-0.53	13.00	1.48	6.74
Textile and clothing	-2.37	0.33	-3.40	5.57	23.92	37.75	-6.27	59.00	38.40	5.91
Nonmetal mineral products	-2.14	0.59	-3.02	5.11	7.86	9.78	-0.69	5.04	1.49	2.25
Furniture	-2.86	0.04	-3.62	5.73	0.56	1.49	-0.77	3.78	2.51	0.78
Footwear	-2.62	0.26	-3.14	5.24	0.39	0.67	-0.05	2.93	0.75	0.83
Professional equipment	-2.11	0.10	-3.04	5.14	13.32	19.34	-2.78	18.58	0.70	15.77
Other manufactures	-0.61	2.31	-2.97	5.02	81.85	132.95	-36.45	68.41	11.77	41.70
Nontraded goods	0.00	-0.32	0.00	-0.54	...	...	...	...	...	...
All goods	-1.22	0.22	-1.77	2.95	992.64	1,520.19	-314.36	992.64	418.16	377.52

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 31—Changes in production, consumption, and trade under Scenario 4: Singapore

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	6.23	1.48	3.78	-2.27	685.72	550.58	59.48	685.72	539.72	185.90
Primary products	5.88	2.13	3.01	-0.74	302.03	229.25	17.73	155.65	260.74	-35.08
Agriculture	5.57	1.51	2.66	-0.01	112.98	56.54	12.47	106.02	160.36	-23.10
Foods	5.92	1.51	2.63	0.45	65.18	46.81	6.08	90.02	131.23	-19.75
Cereals	4.32	2.52	-1.22	6.20	0.32	0.01	0.01	5.73	9.84	-2.06
Vegetable oils and oilseeds	6.10	1.59	4.91	-4.18	7.50	8.43	0.10	-4.34	3.59	-1.72
Other foods	5.92	1.49	2.53	0.75	57.36	38.37	5.97	88.63	117.80	-15.97
Agricultural raw materials	5.13	1.50	2.70	-0.64	47.80	9.73	6.39	16.00	29.14	-3.35
Textile fibers	5.92	2.22	4.48	-1.65	0.68	0.30	0.01	0.18	0.21	-0.01
Other agricultural raw materials	5.12	1.49	2.65	-0.61	47.12	9.44	6.38	15.82	28.92	-3.33
Other primary products	6.11	2.62	4.80	-4.45	189.05	172.70	5.26	49.63	100.38	-11.98
Crude fertilizers	7.29	1.64	5.52	-4.74	8.15	9.55	-0.72	4.31	5.39	-0.46
Mineral fuels	5.94	2.95	4.29	-3.91	170.63	150.95	6.15	47.65	82.44	-2.24
Nonferrous metals	6.86	0.82	6.37	-6.13	10.27	12.21	-0.17	-2.32	12.55	-9.29
Manufactures	6.36	1.23	4.18	-3.07	383.70	321.33	41.75	530.07	278.98	220.99
Chemicals	6.73	2.80	-0.21	6.92	88.58	87.60	1.69	370.17	28.06	260.53
Pharmaceuticals	6.07	2.27	-5.26	17.29	4.10	1.78	2.25	42.68	4.62	27.97
Toiletries and perfumes	6.00	2.21	0.15	5.82	3.27	2.15	0.28	30.91	5.38	20.70
Manufactured fertilizers	6.24	2.40	6.60	-6.33	1.01	0.88	0.00	0.37	0.08	0.27
Other chemicals	6.88	2.92	0.01	6.50	80.21	82.80	-0.84	296.21	17.98	211.59
Iron and steel	6.31	1.25	6.28	-6.04	7.12	5.75	0.52	-3.31	11.31	-10.46
Machinery and equipment	6.44	0.83	4.65	-3.91	184.61	153.30	23.84	170.43	131.62	27.52
Nonelectric machinery	6.54	0.73	6.12	-5.81	71.91	60.97	9.81	-25.61	29.58	-47.12
Electric machinery	6.40	0.86	4.05	-2.88	92.97	79.15	11.79	210.55	92.55	94.15
Transport equipment	5.92	1.43	3.82	-3.27	19.73	13.18	2.24	-14.51	9.49	-19.51

(continued)

Table 31—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	5.92	1.89	3.99	-3.15	103.39	74.68	15.71	-7.23	108.00	-56.60
Leather and travel goods	5.76	1.08	5.38	-5.15	0.52	0.26	0.08	-10.42	1.05	-6.34
Rubber products	6.45	2.57	5.88	-5.64	3.67	3.43	0.16	0.80	3.71	-2.34
Wood products	4.98	0.94	4.16	-3.92	1.50	0.84	1.71	-6.29	-4.30	-0.93
Paper products	5.57	1.30	5.62	-5.39	3.89	2.86	0.22	-8.32	4.65	-7.59
Textile and clothing	5.49	2.48	2.16	-0.85	37.26	19.08	8.62	15.56	58.20	-11.85
Nonmetal mineral products	5.50	1.12	5.12	-4.88	6.34	4.22	0.80	-19.27	15.21	-21.79
Furniture	6.06	1.50	3.40	-3.18	2.41	0.77	1.39	0.33	2.58	-1.37
Footwear	5.47	2.09	5.06	-4.82	0.74	0.37	0.11	-2.63	2.61	-1.99
Professional equipment	6.31	0.98	6.54	-6.30	6.87	4.60	1.12	-7.77	2.20	-8.80
Other manufactures	6.61	2.42	4.77	-3.79	40.18	38.25	1.49	30.80	22.09	6.41
Nontraded goods	0.00	-3.04	0.00	-5.14	...	...	...	...	...	...
All goods	4.93	0.53	2.29	-3.40	685.72	550.58	59.48	685.72	539.72	185.90

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. dollars. Leaders (...) indicate not applicable.

Table 32—Changes in production, consumption, and trade under Scenario 1: Thailand

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	0.20	0.22	-0.17	0.26	112.04	95.77	12.24	112.04	274.84	-118.63
Primary products	0.20	0.19	0.17	-0.06	17.15	5.84	9.82	-1.91	-0.45	-1.33
Agriculture	0.20	0.19	0.17	-0.05	17.00	5.75	9.78	-1.62	1.40	-1.77
Foods	0.20	0.17	0.16	-0.05	12.57	3.56	7.92	-0.78	1.86	-1.62
Cereals	0.25	0.08	0.25	-0.11	1.03	0.72	0.16	-0.03	0.00	-0.02
Vegetable oils and oilseeds	-1.99	-0.96	-6.43	-0.15	1.56	0.61	0.49	1.96	2.10	-0.02
Other foods	0.18	0.24	0.18	-0.03	9.98	2.22	7.27	-2.71	-0.24	-1.58
Agricultural raw materials	0.19	0.26	0.21	-0.07	4.43	2.19	1.87	-0.84	-0.46	-0.16
Textile fibers	0.26	0.20	0.29	-0.16	0.03	0.02	0.01	0.36	0.00	0.13
Other agricultural raw materials	0.19	0.26	0.20	-0.06	4.39	2.17	1.86	-1.20	-0.46	-0.28
Other primary products	0.30	0.09	0.32	-0.19	0.16	0.09	0.04	-0.29	-1.85	0.44
Crude fertilizers	0.27	0.10	0.25	-0.13	0.10	0.00	0.07	-0.17	0.00	-0.08
Mineral fuels	0.31	0.10	0.32	-0.19	-0.02	0.00	-0.01	-0.86	-1.92	0.09
Nonferrous metals	0.31	0.04	0.28	-0.15	0.07	0.09	-0.02	0.74	0.07	0.43
Manufactures	0.20	0.26	-0.35	0.43	94.89	89.93	2.42	113.95	275.29	-117.30
Chemicals	0.21	0.63	-1.12	1.22	11.54	10.94	0.32	24.91	107.80	-56.25
Pharmaceuticals	1.20	1.42	-0.06	0.20	1.48	1.56	-0.08	1.02	2.42	-1.15
Toiletries and perfumes	0.44	0.81	-1.45	1.59	1.75	1.79	-0.01	1.98	6.42	-3.95
Manufactured fertilizers	-0.66	-0.07	-1.12	1.25	0.00	0.00	0.00	1.55	11.20	-3.19
Other chemicals	0.09	0.53	-1.19	1.27	8.31	7.59	0.41	20.36	87.76	-47.96
Iron and steel	0.27	0.06	0.28	-0.15	0.12	0.06	0.04	-0.78	-0.02	-0.45
Machinery and equipment	0.63	0.55	-0.49	0.54	33.05	38.60	-4.57	46.66	107.87	-53.15
Nonelectric machinery	0.27	0.23	0.29	-0.16	2.54	2.31	0.21	-2.37	-0.62	-1.49
Electric machinery	0.98	0.88	-2.58	2.41	30.29	36.19	-4.90	51.59	108.50	-49.20
Transport equipment	0.23	0.15	0.26	-0.14	0.22	0.10	0.12	-2.57	-0.01	-2.46

(continued)

Table 32—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	0.11	0.19	-0.01	0.13	50.17	40.33	6.62	43.16	59.64	-7.45
Leather and travel goods	0.26	0.24	0.14	0.00	1.28	1.17	0.08	0.38	0.55	-0.06
Rubber products	0.00	0.46	-0.76	0.90	2.26	1.81	0.30	2.22	3.84	-1.30
Wood products	0.18	0.05	0.17	-0.04	0.15	0.04	0.12	0.00	0.00	0.00
Paper products	-0.43	0.14	-1.64	1.48	3.14	2.97	0.07	4.57	9.51	-2.69
Textile and clothing	0.04	0.29	-0.19	0.32	33.45	27.56	3.44	33.27	40.15	-1.60
Nonmetal mineral products	0.17	0.04	0.13	-0.01	7.14	5.65	1.27	3.45	5.47	-1.16
Furniture	0.31	0.14	0.22	-0.08	0.63	0.68	-0.05	0.18	0.20	-0.02
Footwear	0.16	0.22	0.16	-0.02	0.84	0.11	0.56	-0.02	0.00	0.00
Professional equipment	0.16	0.28	0.30	-0.16	0.29	0.05	0.14	-0.32	-0.05	-0.23
Other manufactures	0.26	0.12	0.27	-0.14	1.00	0.27	0.69	-0.56	-0.04	-0.29
Nontraded goods	0.00	-0.12	0.00	-0.18	...	...	...	...	...	...
All goods	0.09	0.03	-0.06	-0.03	112.04	95.77	12.24	112.04	274.84	-118.63

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. Dollars. Leaders (...) indicate not applicable.

Table 33—Changes in production, consumption, and trade under Scenario 2: Thailand

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	0.87	0.48	-0.09	0.34	189.16	128.88	48.91	189.16	589.08	-306.42
Primary products	0.89	0.41	0.86	-0.54	41.69	11.11	26.43	-14.81	-4.67	-5.85
Agriculture	0.87	0.41	0.85	-0.53	40.55	10.85	25.86	-12.26	-0.16	-6.83
Foods	0.87	0.37	0.82	-0.51	29.62	6.60	20.26	-7.32	1.37	-5.55
Cereals	0.85	0.26	0.84	-0.51	3.58	1.46	1.10	-0.22	0.00	-0.21
Vegetable oils and oilseeds	-1.22	-0.69	-6.03	-0.34	1.64	0.63	0.52	1.96	2.11	-0.02
Other foods	0.90	0.45	0.87	-0.51	24.40	4.50	18.64	-9.05	-0.74	-5.33
Agricultural raw materials	0.87	0.54	0.94	-0.60	10.93	4.25	5.59	-4.93	-1.53	-1.28
Textile fibers	1.04	0.56	1.18	-0.86	0.10	0.04	0.03	-0.38	-0.01	-0.13
Other agricultural raw materials	0.87	0.54	0.90	-0.56	10.83	4.21	5.57	-4.56	-1.52	-1.15
Other primary products	1.11	0.45	1.17	-0.85	1.14	0.26	0.58	-2.55	-4.51	0.98
Crude fertilizers	1.01	0.64	1.00	-0.71	0.67	0.06	0.40	-0.34	-0.01	-0.17
Mineral fuels	1.12	0.44	1.17	-0.85	0.26	0.00	0.16	-4.07	-4.69	0.05
Nonferrous metals	1.20	0.17	1.14	-0.84	0.21	0.19	0.02	1.86	0.18	1.09
Manufactures	0.85	0.54	-0.58	0.79	147.48	117.78	22.48	203.98	593.75	-300.57
Chemicals	1.02	0.88	-0.25	0.53	11.99	11.02	0.54	22.80	107.44	-57.46
Pharmaceuticals	1.99	1.65	0.84	-0.51	1.49	1.56	-0.07	0.86	2.42	-1.27
Toiletries and perfumes	1.24	1.06	-0.55	0.88	1.81	1.81	0.00	1.86	6.40	-4.05
Manufactured fertilizers	0.11	0.15	-0.20	0.53	0.00	0.00	0.00	1.36	11.16	-3.24
Other chemicals	0.90	0.78	-0.33	0.59	8.69	7.65	0.60	18.73	87.46	-48.91
Iron and steel	0.89	0.34	0.70	-0.41	3.50	2.90	0.48	0.98	21.70	-12.42
Machinery and equipment	1.38	1.08	-1.07	1.24	49.52	51.99	-2.08	114.43	323.07	-180.26
Nonelectric machinery	1.12	0.76	-1.83	2.04	12.35	11.62	0.66	82.87	211.77	-109.84
Electric machinery	1.61	1.41	-1.81	1.80	34.33	37.59	-2.78	42.47	107.47	-56.19
Transport equipment	1.19	0.67	0.98	-0.70	2.84	2.79	0.04	-10.92	3.83	-14.23

(continued)

Table 33—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	0.73	0.43	0.11	0.15	82.47	51.86	23.53	65.77	141.55	-50.43
Leather and travel goods	0.96	0.50	0.90	-0.57	2.05	1.43	0.48	0.04	0.55	-0.17
Rubber products	0.79	0.70	0.08	0.24	2.47	1.84	0.42	2.05	3.83	-1.42
Wood products	0.39	0.09	-0.16	0.01	1.00	0.28	0.79	1.05	1.07	-0.02
Paper products	0.23	0.40	-0.95	0.96	3.26	3.04	0.09	4.00	9.43	-2.95
Textile and clothing	0.73	0.52	0.52	-0.20	39.86	28.84	6.50	29.59	39.95	-2.41
Nonmetal mineral products	0.73	0.20	0.72	-0.40	11.48	5.89	4.78	-0.48	5.41	-3.36
Furniture	1.02	0.64	0.95	-0.63	1.73	0.86	0.81	0.10	0.20	-0.09
Footwear	0.81	0.45	0.78	-0.45	2.56	0.55	1.56	0.26	0.32	-0.01
Professional equipment	0.76	0.90	-0.18	0.49	1.21	0.40	0.47	2.57	12.15	-8.32
Other manufactures	0.77	0.54	-1.59	1.70	16.85	8.74	7.63	26.58	68.64	-31.68
Nontraded goods	0.00	-0.26	0.00	-0.38	...	...	...	...	...	...
All goods	0.38	0.97	-0.03	-0.14	189.16	128.88	48.91	189.16	589.08	-306.42

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. Dollars. Leaders (...) indicate not applicable.

Table 34—Changes in production, consumption, and trade under Scenario 3: Thailand

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	1.19	0.64	0.18	0.19	405.35	274.09	106.28	405.35	1,110.79	-393.38
Primary products	1.05	0.48	0.40	-0.25	236.13	153.01	68.79	242.43	520.70	-64.62
Agriculture	1.31	0.57	0.57	-0.43	213.29	145.78	59.38	159.39	217.59	-28.84
Foods	1.62	0.72	0.94	-0.83	156.22	122.22	31.31	62.78	89.66	-17.14
Cereals	1.93	0.53	1.92	-1.30	23.91	23.73	0.09	0.01	0.02	-0.01
Vegetable oils and oilseeds	-0.57	-0.44	-5.69	-0.42	1.71	0.66	0.54	1.96	2.12	-0.02
Other foods	1.44	0.85	0.72	-0.70	130.60	97.83	30.67	60.80	87.53	-17.11
Agricultural raw materials	0.28	0.05	-0.56	0.78	57.07	23.56	28.07	96.61	127.94	-11.70
Textile fibers	2.25	1.11	1.62	-1.02	1.57	1.65	-0.04	0.90	5.66	-1.68
Other agricultural raw materials	0.25	0.03	-0.88	1.04	55.51	21.91	28.11	95.72	122.27	-10.02
Other primary products	-2.12	-0.55	-4.89	5.34	22.84	7.23	9.41	83.04	303.10	-35.78
Crude fertilizers	1.80	1.36	0.99	-0.47	3.97	3.47	0.32	4.56	13.87	-4.69
Mineral fuels	-3.59	-1.22	-5.12	5.57	16.86	1.30	9.48	75.09	263.18	-16.31
Nonferrous metals	2.22	1.21	0.15	0.42	2.01	2.46	-0.39	3.39	26.05	-14.77
Manufactures	1.33	0.80	0.07	0.42	169.22	121.08	37.49	162.92	590.09	-328.76
Chemicals	1.68	1.11	0.46	0.10	12.39	11.10	0.72	21.43	107.13	-58.18
Pharmaceuticals	2.63	1.86	1.58	-0.96	1.50	1.56	-0.06	0.75	2.41	-1.36
Toiletries and perfumes	1.90	1.29	0.19	0.43	1.85	1.83	0.00	1.78	6.38	-4.11
Manufactured fertilizers	0.73	0.34	0.53	0.08	0.00	0.00	0.00	1.22	11.19	-3.30
Other chemicals	1.56	1.01	0.38	0.16	9.03	7.70	0.77	17.69	87.15	-49.42
Iron and steel	1.52	0.58	1.38	-0.81	3.79	2.97	0.67	-1.46	21.58	-13.80
Machinery and equipment	2.04	1.22	-0.40	0.83	52.20	53.18	-0.80	90.65	320.56	-199.18
Nonelectric machinery	1.80	0.89	-1.12	1.61	13.35	12.12	1.12	71.37	210.02	-118.15
Electric machinery	2.27	1.57	-1.17	1.41	35.78	38.19	-2.11	36.61	106.74	-60.63
Transport equipment	1.85	0.75	1.63	-1.09	3.06	2.86	0.19	-17.33	3.81	-20.40

(continued)

Table 34—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	1.17	0.71	0.69	-0.13	100.84	53.83	36.91	52.30	140.82	-57.60
Leather and travel goods	1.57	0.68	1.55	-0.93	2.57	1.62	0.74	-0.16	0.55	-0.23
Rubber products	1.43	0.91	0.77	-0.15	2.65	1.86	0.53	1.92	3.81	-1.52
Wood products	0.64	0.43	0.08	0.07	1.51	0.33	1.28	1.04	1.07	-0.02
Paper products	0.83	0.62	-0.33	0.62	3.36	3.10	0.11	3.77	9.36	-3.04
Textile and clothing	1.34	0.65	1.15	-0.54	43.94	29.78	8.35	27.26	39.77	-2.91
Nonmetal mineral products	0.72	0.79	0.79	-0.16	20.73	6.26	12.36	-7.88	5.30	-7.52
Furniture	1.65	0.90	1.60	-0.98	2.29	0.90	1.30	0.06	0.20	-0.13
Footwear	1.47	0.47	1.43	-0.81	3.08	0.60	1.92	0.24	0.32	-0.02
Professional equipment	1.40	1.09	0.56	0.04	1.41	0.41	0.57	1.15	12.05	-9.46
Other manufactures	1.39	0.86	-0.91	1.30	19.31	8.96	9.74	24.90	68.38	-32.75
Nontraded goods	0.00	-0.33	0.00	-0.49	...	...	...	...	...	...
All goods	0.52	0.10	0.06	-0.27	405.35	274.09	106.28	405.35	1,110.79	-393.38

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. Dollars. Leaders (...) indicate not applicable.

Table 35—Changes in production, consumption, and trade under Scenario 4: Thailand

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Traded goods	14.04	6.58	3.79	-0.46	2,572.19	343.58	1,836.30	2,572.19	325.40	1,374.39
Primary products	15.15	5.88	9.24	-7.39	1,315.84	191.75	981.27	946.51	179.79	440.14
Agriculture	15.39	5.84	9.32	-7.58	1,224.98	181.58	928.72	836.42	141.64	401.03
Foods	15.77	5.70	9.29	-8.47	940.44	142.81	722.12	592.07	60.67	340.40
Cereals	17.15	5.35	16.86	-11.32	85.89	30.47	28.80	9.10	0.02	8.41
Vegetable oils and oilseeds	11.83	4.82	-13.61	-4.40	7.22	1.17	3.16	6.49	1.70	0.56
Other foods	14.93	5.93	7.39	-7.72	847.33	111.18	690.16	576.48	58.96	331.44
Agricultural raw materials	14.14	6.31	9.42	-4.86	284.54	38.77	206.60	244.35	80.96	60.63
Textile fibers	8.54	3.51	-2.77	7.95	8.56	2.87	2.63	41.42	1.13	14.17
Other agricultural raw materials	14.23	6.36	11.19	-6.72	275.98	35.91	203.97	202.92	79.83	46.46
Other primary products	12.27	6.33	6.73	-1.58	90.86	10.16	52.55	110.09	38.16	39.11
Crude fertilizers	17.86	12.06	5.99	-1.34	31.16	5.00	17.45	45.05	2.39	21.52
Mineral fuels	9.59	4.30	6.79	-1.63	48.67	0.91	29.23	31.38	28.75	0.23
Nonferrous metals	22.94	11.75	4.34	0.81	11.02	4.25	5.86	33.66	7.02	17.36
Manufactures	12.99	7.24	1.00	3.09	1,256.35	151.83	855.03	1,625.68	145.61	934.25
Chemicals	11.99	6.80	1.46	3.38	63.63	12.37	29.35	178.81	21.75	119.64
Pharmaceuticals	11.35	6.29	4.14	1.48	2.62	1.21	1.31	8.75	0.54	6.69
Toiletries and perfumes	9.84	5.08	-5.25	10.90	7.63	2.80	0.81	16.31	1.29	13.39
Manufactured fertilizers	13.67	8.15	16.04	-10.40	0.00	0.00	0.00	-3.89	7.50	-3.76
Other chemicals	12.32	7.06	-0.39	5.01	53.38	8.35	27.23	157.65	12.42	103.33
Iron and steel	9.25	4.56	4.19	0.55	39.02	6.85	26.41	62.77	6.43	33.76
Machinery and equipment	17.99	11.10	-2.12	5.56	214.19	59.48	134.57	530.66	56.50	421.56
Nonelectric machinery	19.54	10.33	1.73	2.83	74.98	25.49	45.46	148.38	30.10	100.80
Electric machinery	17.86	12.42	-8.45	10.15	110.40	30.06	65.00	250.87	25.38	194.93
Transport equipment	11.79	7.04	-2.35	5.65	28.82	3.92	24.10	131.41	1.02	125.83

(continued)

Table 35—Continued

Sector	Production		Consumption		Exports			Imports		
	Price	Quantity	Price	Quantity	World	ASEAN	Industrial Countries	World	ASEAN	Industrial Countries
	(percent)				(US\$ million)					
Other manufactures	12.15	6.56	6.44	-1.35	939.52	73.13	664.70	853.44	60.92	359.28
Leather and travel goods	15.22	8.81	7.48	-1.85	28.87	1.37	21.78	23.67	0.33	7.63
Rubber products	13.54	8.04	4.75	0.87	21.79	2.57	13.13	24.43	1.80	18.11
Wood products	12.92	5.55	11.01	-6.58	12.30	0.43	13.22	2.38	0.77	1.05
Paper products	4.38	2.82	-4.09	6.61	8.36	3.38	2.11	21.08	2.31	10.22
Textile and clothing	12.71	6.71	9.76	-4.22	355.19	40.88	186.78	417.15	29.02	90.22
Nonmetal mineral products	8.18	3.05	6.45	-1.22	227.30	10.74	185.18	140.12	2.73	78.37
Furniture	19.84	12.65	15.32	-9.68	31.59	0.99	28.76	8.29	0.15	7.34
Footwear	16.82	9.75	16.38	-10.75	50.80	1.37	38.52	2.99	0.25	0.63
Professional equipment	17.28	14.95	0.42	4.91	17.28	0.75	9.62	25.70	1.66	20.87
Other manufactures	16.91	12.88	-3.01	6.55	186.04	10.63	165.60	187.64	21.90	124.84
Nontraded goods	0.00	-3.68	0.00	-5.31	...	...	...	...	...	...
All goods	6.17	0.83	1.26	-3.70	2,572.19	343.58	1,836.30	2,572.19	325.40	1,374.39

Source: Simulations of the ASEAN trade simulation model using 1988 trade flows and circa 1987 import control measures data as baseline data and assuming ad valorem customs duties are reduced to zero and nontariff barriers are liberalized to increase the value of administered imports by 25 percent.

Notes: Consumption refers to final demand. Changes in aggregate production and consumption are averages of sectoral changes, using base period levels of production and consumption as weights. Changes in exports and imports are per year, measured in 1988 U.S. Dollars. Leaders (...) indicate not applicable.

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