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SUSTAINABLE GROUPING OF ECONOMIES FOR A PACIFIC RIM TRADING BLOC

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This paper is concerned with finding sustainable grouping of economies for an APEC trading bloc. Several combinations of economies are considered and effects of economic integration of each grouping are evaluated, using a multi-sector, multi-region, computational general equilibrium (CGE) model. The model predicts that some very substantially large trading bloc would be sustainable in the Pacific region. For example, the imperfectly-competitive model suggests that, if a trading bloc in the Pacific rim could be achieved by excluding Canada, Mexico, and Thailand, all remaining members would gain and therefore, can be candidates for a Pacific rim trading bloc. The imperfectly-competitive model simulates substantially larger welfare gains than does the perfectly-competitive model. According to the imperfectly-competitive model, Korea, Taiwan, Singapore, and China/Hong Kong would reap very large gains from the trading bloc.

JEL Classification: F15, D58, C63
Keywords: Trading Bloc, Asia Pacific Rim, Generdl Equilibrium Modeling, CGE

I. INTRODUCTION

Since APEC had its first meeting at Canberra in 1989, APEC has gained rapid momentum for economic integration in the region. Even though many authors suggest that trade liberalization in the Asia-Pacific area would accelerate development, there has been surprisingly little research into the effects of such liberalization. In this paper, we study the economic effects of trade

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liberalization in the Pacific Rim. We perform simulations with a computational general equilibrium model, in order to assess the welfare changes for different combinations of member countries within APEC. If every member of a group of countries in the APEC can improve welfare by liberalizing trade, this group will be a candidate for a trading bloc in the region.

In many of the early simulation studies of trade liberalization and economic integration, the welfare effects were estimated to be extremely small. However, these early studies were limited because they assumed perfect competition and constant returns to scale. Harris (1984) shows that the inclusion of scale economies and imperfect competition can increase the simulated welfare effects of trade liberalization substantially.[1]

The basic data used in this paper are from the Global Trade Analysis Project model (GTAP).[2] The GTAP data base includes matrices describing bilateral trade, transport, and protection. We use this data base for both the perfectly-competitive model and the imperfectly-competitive model. These matrices link economic data for 24 regions, covering the entire world. Each regional data base is derived from the input-output tables for the countries that are included in the region. The disaggregated GTAP data base consists of 37 sectors and 24 regions. Since we are focusing on a trading bloc in the Pacific Rim, we aggregate the GTAP data base into 14 regions, as shown in Table 1.

[**Table 1**] Aggregation Mappings of Regions

(1) Australsia: Australia and New Zealand
(2) China/HK: China and Hong Kong
(3) Canada
(4) Indonesia
(5) Japan
(6) Korea
(7) Malaysia
(8) Mexico
(9) Philippines
(10) ROW: regions not classified
(11) Thailand
(12) SNG/TWN: Singapore and Taiwan
(13) USA

[1] The literature on international trade under increasing returns to scale includes Cox and Harris (1985, 1986, and 1992), Dixit and Norman (1988), Helpman (1981), Helpman and Razin (1983), Hunter, Markusen, and Rutherford (1992), Markusen and Wigle (1989), de Melo and Robinson (1989), and Mercenier and Schmitt (1992).

[2] See Hertel, et al. (1997).

[Table 2] Aggregation Mappings of Sectors

(1) AGR: agriculture
(2) LMN: light manufacturing
(3) RCR: resource, chemical and refinery
(4) TME: transportation and machinery
(5) SVC: Service

We simulate the effects of a variety of forming trading blocs with the original GTAP model, which assumes perfect competition. We also study the effects of economic integration with our model with imperfect competition, in order to study the sensitivity of the welfare changes to different model specifications. Industry sectors are aggregated, based on similarities of the degree of scale economies and sectoral characteristics. The 37 GTAP sectors in each region are aggregated into five sectors. The five aggregated production sectors in each region consist of one service sector, one agricultural sector, and three manufacturing sectors, as shown in Table 2.

In our model with imperfect competition, two of these five sectors are assumed to be monopolistically competitive, with increasing-returns-to-scale technology and fixed costs. The other three sectors are assumed to be perfectly competitive, in all versions of the model.

Neither the perfectly-competitive GTAP model nor the imperfectly-competitive model predicts that a trading bloc would be easily sustainable for the entire Asia-Pacific region, since each of these models predicts that some regions would suffer welfare losses as a result of the policy change. However, the models do predict that some very substantially large trading bloc would indeed be sustainable. For example, the imperfectly-competitive model suggests that a sustainable trading bloc could be achieved by including all of the APEC countries except for Canada, Mexico, and Thailand.

The imperfectly-competitive model simulates substantially larger welfare gains than does the perfectly-competitive model. According to the imperfectly-competitive model, Korea, Taiwan, Singapore, and China/Hong Kong would be the biggest winners from the formation of the trading bloc. For several of the simulated scenarios, Singapore gains by more than five percent of *GDP*, and Korea gains by more than six percent. In percentage terms, the gains are much more modest for the United States and for Japan, and these two countries actually suffer small welfare losses in some cases.

II. DESCRIPTION OF THE MODEL

We begin with a description of consumer preferences. If goods of the same category were truly homogeneous, each country would specialize in the production of a small number of goods, and cross-hauling of the same good would not be observed in real trade data. In order to deal with this difficulty, it has been popular to employ the "Armington assumption" to explain product differentiation. Armington (1969) suggested that products are differentiated by country of origin. The standard version of the *GTAP* model uses the Armington assumption, as do a number of other models that have been used in this literature.

However, under the Armington assumption, product differentiation by country of origin is exogenous to the model, and is necessarily somewhat ad hoc. Norman (1990, p. 725) concludes that the Armington approach is "a poor substitute for explicit incorporation of oligopolistic interaction and product differentiation at the firm level." Norman finds that the Armington approach understates the effects of trade liberalization.

An alternative approach is based on theoretical work by Dixit and Stiglitz (1977). Their idea is to assume that products are differentiated, not by country of origin, but by producing firm. Firm-level product differentiation is necessarily linked to imperfect competition, while the Armington assumption does not necessarily require imperfect competition.

With firm-level product differentiation, consumers select commodities directly, without a middle procedure of dividing the composite commodity between domestic goods and imports, as with the Armington assumption. Thus, consumers look at the brand name of the commodity, rather than its country of origin.

For either the perfectly-competitive version or the imperfectly-competitive version of the model, consumer preferences are represented by a two-level nested structure. The top nest is a Cobb-Douglas utility function, in which utility depends on the consumption of aggregated commodities (both imported and domestic). The second level of the utility function determines the optimal composition of the consumption aggregates, in terms of firm or region of origin. For the perfectly-competitive sectors, we have:

$$d_r^i = \psi \left\{ \sum_{s=1}^{T} {d_{sr}^i}^{\sigma_c - 1/\sigma_c} \right\}^{\sigma_c/\sigma_c - 1} \tag{1}$$

where d_r^i is consumption demand for aggregated good i in region r, d_{sr}^i is region r's demand for good i from region s, σ_c is the elasticity of substitution between traded commodities for consumers, and Ψ is a positive scale parameter. The imperfectly-competitive sectors have additional components. These include

n_s^i (the number of firms operating in region *s's* production sector *i*), and φ_{sr}^i (region *r's* market share for good *i* from region *s*).

$$d_r^i = \Psi \left\{ \sum_{s=1}^{T} n_s^i * \varphi_{sr}^i * d_{sr}^{i\ \sigma_{c-1}/\sigma_c} \right\}^{\sigma_c/\sigma_{c-1}} \tag{2}$$

The second-level nest (eq. (1) or eq. (2)) identifies the sources of composite consumption.[3]

Now that we have described the consumer preferences, we turn our attention to the structure of production. All firms employ labor and capital as primary production factors. Both labor and capital are assumed to be perfectly mobile within the region, but immobile between regions. We assume that primary factor markets are perfectly competitive, so that the prices of primary factors (labor and capital) are the same for the perfectly- and imperfectly-competitive sectors.

In the perfectly-competitive sectors, the producer's price equals marginal cost. It is assumed that the perfectly-competitive firms operate with constant-returns-to-scale technologies. The imperfectly-competitive sectors are (1) chemicals, plastics, resources, and resource refinery, and (2) transportation, machinery, and equipment. This classification is based on the size of scale economies, studied by Prattern (1988). The imperfectly-competitive firms have fixed costs, as a result of which their technology exhibits decreasing average costs. Fixed costs are composed of labor and capital. The imperfectly-competitive sectors are characterized by free entry and exit, and zero net profits. Thus, we can think of these sectors as monopolistically competitive.

Each industry in the imperfectly-competitive sectors has *n* firms per region, where *n* is specified exogenously for the base-case equilibrium. The variable for the number of firms will be determined endogenously when the new equilibrium is calculated, because of free entry and exit. Each firm in an imperfectly-competitive industry has the same technology and the same pricing rule, and each industry is assumed to produce n different varieties. If free trade were achieved in the Pacific-Rim region, the elimination of trade barriers would cause prices to fall. As a result, the quantity demanded would increase for each variety. Firms would then increase their production, which would decrease the average total costs in the imperfectly-competitive industries.

Figure 1 shows the production structure for the imperfectly-competitive sectors.[4] Firm-level commodities are aggregated into a composite commodity,

[3] Equation (2) shows a typical method of incorporating firm-level product differentiation into a CGE model, used by trade modelers such as Brown (1992), Mercenier and Schmitt (1992), and Nguyen and Wigle (1992).

[4] The shares of the imperfectly-competitive sectors in regional output vary widely by region. Singapore has the highest share, at 44 percent. Taiwan is next, with a 32 percent share, followed by Korea and Malaysia with 28 percent. The shares are lowest in the Philippines and Thailand (13%-14 %), while the U.S. and Japan are in the middle (21%-24%).

using a C.E.S. formulation. Primary production factors are aggregated into fixed value added and variable value added, once again using a C.E.S. function. In addition, the top of the production structure in the imperfectly-competitive sectors will combine variable value added and composite intermediate goods, using a fixed-coefficient (Leontief) technology.

For the perfectly-competitive sectors, we define composite intermediate goods as:

$$z_r^{ji} = \Phi \left\{ \sum_{s=1}^{T} z_{sr}^{ji\ \sigma-1/\sigma} \right\}^{\sigma/\sigma-1}, \tag{3}$$

where z_{sr}^{ji} is the conditional demand of the production sector i in region r for intermediate good j from region s. Firms can demand domestically-produced intermediate goods (s equal r in the eq. (3)) and imported intermediates (s differs from r in the eq. (4)). That is, the elements along the diagonal of the matrix for the variable of z_{sr}^{ji} represent firm's conditional demand for intermediate goods, while those off the diagonal represent conditional demand for imported inputs.

For the imperfectly-competitive sectors, composite intermediate goods are defined as:

$$z_r^{ji} = \Phi \left\{ \sum_{s=1}^{T} n_s^{i} * \xi_{sr}^{ji} * z_{sr}^{ji\ \sigma-1/\sigma} \right\}^{\sigma/\sigma-1}. \tag{4}$$

In eq. (4), Φ is a scale parameter, and ξ_{sr}^{ji} is firm i's share in region r for good j from region s. As in eq. (3), the *CGE* model will read the data for firm's conditional demand for intermediate goods from the elements along the diagonal of the matrix for the variable of z_{sv}^{ji}, while conditional demand for imported inputs can be taken from elements off the diagonal matrix.

Currently, engineering information for fixed costs is not available at levels of aggregation that are sufficiently high to be used in a model of this type. Thus, it will be necessary to calibrate fixed value added for the imperfectly-competitive model in this paper. (For details, see Cheong (1995).) As the total perceived demand elasticity increases, the calibration process makes it necessary for fixed value added to be lower, given the market value of the firm's output. Since fixed value added is a part of total value added, the calibration process must observe the restriction that the ratio of fixed value added to total value added cannot be greater than one.

It is necessary to specify a relationship between prices and costs for the imperfectly-competitive firms. We use the Lerner pricing rule. The Lerner formula for the optimal pricing rule for a monopolistically-competitive firm is:

$$\frac{p_{sr}^{i} - c_{ri}^{M}}{p_{sr}^{i}} = \frac{1}{E_r^{i}} \tag{5}$$

where c^M_{ri} is the marginal cost of producing good i in region r. E^i_r is the absolute value of the perceived total demand elasticity faced by producers of good i in region r. E^i_r cannot be less than one, since the supply price cannot be less than marginal cost.

Defining the markup rate as $M^i_r = \frac{p^i_{sr}}{c^M_{ri}}$, eq. (5) becomes

$$M^i_r = \frac{E^i_r}{E^i_{r-1}} \tag{6}$$

where the markup rate is greater than one, since the total demand elasticity is greater than one. From eq. (6), we see that the markup rate will go down if the total perceived demand elasticity increases. As the perceived total demand elasticity increases, the model approaches the perfectly-competitive position quickly. This will tend to reduce the efficiency gains from realization of trade liberalization.

The perceived total demand elasticity depends on each imperfectly-competitive firm's expectations about the behavior of rival firms. With the Cournot conjecture, it is assumed that a rival firm's quantity will be fixed, but rivals adjust their prices to clear the markets for differentiated products. In recent *CGE* modeling for imperfectly-competitive models, the Cournot conjecture has been used widely. For example, see Norman (1990) and Harrison, Rutherford, and Tarr (1995). An alternative to the Cournot conjecture is the Bertrand conjecture, under which it is assumed that firms will change their output, while leaving their prices unchanged.

Ceteris paribus, the Cournot perceived elasticity will be lower than the Bertrand perceived elasticity, and the associated markup will be larger. Thus, we expect that the estimated welfare effects will be larger, when imperfectly-competitive firms are assumed to operate under the Cournot conjecture. Thus, the Bertrand conjecture can be viewed as a more conservative assumption. In the results section, below, we report on simulations performed under each of these conjectures.

The market-clearing conditions for labor and capital for each region are:

$$\begin{aligned} L_r &= \sum_{h \in PCM} L^V_{rj} + \sum_{h \in PCM} N^h_{rh} * L^V_{rh} + \sum_{h \in PCM} N^h_r * L^f_{rh} \\ K_r &= \sum_{h \in PCM} K^V_{rj} + \sum_{h \in PCM} N^h_r * K^V_{rh} + \sum_{h \in PCM} N^h_r * K^f_{rh} \end{aligned} \tag{7}$$

where $L_r (K_r)$ denotes the total supply of labor (capital) in region r. In equations (7), *PCM* represents the set of perfectly-competitive sectors, and IMC is the set of imperfectly-competitive sectors. $L^V_{rj} (K^V_{rj})$ is labor (capital) per firm for competitive sector j in region r,[5] L^{V}_{rj} (K^{V}_{rj}) is variable labor (capital) per firm for the imperfectly-competitive sectors, and L^{f}_{rh} (K^{f}_{rh}) is fixed labor (capital) per firm for the imperfectly-competitive sectors. N^{h}_{r} is the number of *IMC* firms in production sector h in region r.

For each region in the model, the domestically-produced commodities, q^{i}_{r}, should be equal to the sum of region r's sales of commodity i, such that

$$q^{i}_{r} = \sum_{s=1}^{T} s^{i}_{sr} , \tag{8}$$

where s^{i}_{sr} is region r's sale of commodity i to region s. Total imports of each commodity should satisfy both the final demand for that good by private households and the intermediate demand by production sectors. Imports by source will equal the sum of all the domestic demands for the imported good in each region. The equilibrium condition for imports by source will be

$$s^{i}_{sr} = d^{i}_{sr} + \sum_{i=1}^{N} z^{ji}_{sr} . \tag{9}$$

III. DATA, PARAMETERS, AND SIMULATIONS

The GTAP data base uses regional input-output matrices taken from the SALTER-III data base.[6)] The international trade data used in GTAP are based on United Nations D series trade statistics. Export subsidy and protection data are obtained from the original country submissions to GATT for the Uruguay Round. The 1994 version of the GTAP data base used in this paper comprises 24 disaggregated regions and 37 disaggregated sectors.

By reducing the dimension of the model, we can reduce its computational complexity. To this end, we simplify the GTAP model and data base in the following ways:

(1) We remove government consumption in each region. Government consumption will be regarded as a part of private consumption of final goods. All tax and tariff revenues are assumed to be rebated to the household.[7)]

(2) We eliminate re-exports via Hong Kong. We count re-exports as a part of domestic consumption of domestically-produced goods.

(3) We combine the transportation services sector with exports.

(4) The GTAP model assumes that the agricultural sector has 3 primary

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[5] Since the perfectly-competitive sectors have no fixed factors, the percentage changes of primary factors for perfectly-competitive sectors are represented with variable primary production factors only.

[6] See Jomini, *et al.* (1991).

[7] Government expenditure is added into the data for consumer's expenditure in order to reduce the size of matrix, since our model will be solved, by inverting matrix of variables.

[**Table 3**] Parameters for the Elasticity of Substitution

	Parameters for Standard Model		Parameters for Extended Model		
	Armington Specification	Elasticity for Imports	Elasticity for Imports	*High*	*Low*
Agriculture	2.48	4.72	4.72	4.72	4.72
Light Manufacturing	2.53	5.82	5.82	5.82	5.82
Resource, Chemicals	2.32	4.81	4.81	4.40	7.30
Transportation, Machinery	3.43	6.91	6.91	5.10	8.10
Service	1.94	3.92	3.92	3.92	3.92

production factors (land, labor, and capital), while the other sectors have only labor and capital. Our paper is much more concerned with manufacturing sectors than with agricultural sectors. Thus, we remove land from the set of primary production factors for the agricultural sector. The cost of land used will be added into capital.

It is necessary to specify the number of firms for the imperfectly-competitive sectors. We will follow Nguyen and Wigle (1992), by assigning some number of firms (e.g., 100) to each of the imperfectly-competitive sectors, and conducting a sensitivity test by assigning different numbers of firms (e.g., 25, 50, 200, and 1000).

As described above, GTAP has two sets of elasticities for traded commodities. The numbers on the left side of the GTAP parameter column in Table 3 are the Armington elasticities, which are used for dividing aggregated commodities into domestically-produced goods and imported goods. The right side contains the elasticities for imported commodities, which are used to identify the sources of aggregated imports. One of most difficult parts in modeling a *CGE* model is to assign parameters. The problem arises from the lack of information on those parameters. The full representation of economies in this paper needs price elasticities of demand for all the sectors of each economy. Generally, it is not easy to access information on these. Therefore, the paper uses common parameters in the GTAP database.[8] However, these elasticities are in quite reasonable ranges. For example, Mercenier and Schmitt (1992) use elasticities ranging from two to four for the competitive sectors, and they use values of five to ten for the imperfectly-competitive sectors. However, Brown and Stern (1989b) use an elasticity of 15. This high elasticity was required by Brown and Stern, in order for the fixed value-added shares to be lower than one.

Simulations using the perfectly-competitive model will be performed with the GTAP elasticities. These elasticities are moderate in size, when compared to those in Mercenier and Schmitt or in Brown and Stern. For the model with product differentiation at the firm level, we use the elasticity of substitution for imported goods for our central case. When the elasticities of substitution

[8] With more information available, economy-specific elasticities can be used for the *CGE* model in this paper.

are increased for the imperfectly-competitive sectors, the fixed value-added shares must be decreased. For the column of Table 3 that is marked "High", the elasticities are calibrated so that the ratios of fixed value added to total value added are maintained below 99% in every case.

If we solve all equations for consumers and producers simultaneously, satisfying the market-clearing conditions, we have an equilibrium which replicates the observed data. Then, policy changes can be simulated by changing the relevant policy parameters and recalculating a new equilibrium. With this procedure, we can predict the effects of policy changes, such as the effects of a bilateral reduction of tariffs on regional income. We solve the model using GEMPACK (General Equilibrium Modeling PACKage), which is a suite of general-purpose economic modeling software. (See Harrison and Pearson (1993).) The solution technique involves linearizing the equations of the model, and then solving the linearized system. This technique, which was pioneered by Johansen (1960), involves linearizing the equations of the model, and then solving the linearized system. The solution technique used in this paper involves a multi-step simulation method, which eliminates the approximation errors that can sometimes occur with a linearized model.

Ⅳ. RESULTS

In our simulations, we assume that a trading bloc is formed by removing 55 percent of all tariffs and non-tariff barriers between all member regions. This is based on our judgment that it will be especially difficult to remove the non-tariff barriers. It also allows us to produce a conservative set of estimates. *If* it proves possible to remove the barriers to trade more completely, then the welfare gains will be larger.

Formation of a new trading bloc has different welfare consequences for the regions involved, depending on the net effects of trade creation and trade diversion. The simulated production efficiency gain will be greater in a model with imperfect competition, since the elimination of import tariffs will provide imperfectly-competitive firms with a larger market for their products. With a larger market, they will lower their markup, and they can produce goods at lower costs at higher output levels.

We consider ten possible regional groupings for a new trading bloc in the Pacific Basin. The possible groupings are:

(1) All regions in the Pacific Rim are assumed to participate. In our data aggregation, all the regions except the rest of the world (ROW) will be *APEC* members.

(2) APEC minus Canada.

(3) APEC minus Mexico.

(4) APEC minus Thailand.

Canada and Mexico are chosen for exclusion from the trading bloc in simulations (2) and (3) because they are already members of NAFTA, so that they have access to the U.S. market. If a new economic integration is realized with the United States, Canada and Mexico will face greater competition in the North American market. We focus on Thailand because it has a relatively small amount of trade with the other APEC nations.

(5) APEC minus CM. Neither Canada nor Mexico will participate in APEC.

(6) APEC minus CMT. Canada, Mexico, and Thailand will not participate in APEC.

(7) AF-11 plus Japan. An eleven-nation, Asia-based trading bloc (AF-11) will include four Asian newly-industrialized economies (NIEs: Hong Kong, Korea, Singapore, and Taiwan), four ASEAN economies (Indonesia, Malaysia, the Philippines, and Thailand), China, Australia, and New Zealand. In scenario (7), Japan joins AF-11.

(8) AF-11 plus U.S. The United States joins the AF-11.

(9) AF-11. Neither the United States nor Japan joins the trade liberalization.

(10) AF-11 minus Thailand. Thailand withdraws from the AF-11.

These scenarios are designed to study the consequences of removing import barriers within regions involved in each scenario, scrutinizing carefully what happens to welfare for the possible member regions. The scenarios are ordered according to the number of countries involved in the new trading bloc (i.e., APEC has the most countries, and AF-11 minus Thailand has the fewest).

We simulate each of the ten groupings under all combinations of model assumptions: (a) two assumptions about the firm's conjectures (Cournot and Bertrand), (b) three sets of elasticities (*GTAP* parameters, 99%, and 59%), and (c) five different numbers of firms (100, 25, 50, 200, 1000). The central case for our imperfectly-competitive model will be the simulation with GTAP elasticities, and with 100 firms operating in each imperfectly-competitive sector.

Table 4 reports the welfare effects that emerge from simulations of the perfectly-competitive model, with standard GTAP parameters. The first column displays the welfare effects under the full APEC. The results suggest that Canada, Malaysia, Mexico, and Thailand may suffer a deterioration of their welfare as a result of APEC. Thus, if we are guided by the results of the perfectly-competitive model, the full APEC may not be sustainable.

From the column marked "APEC - Canada" in Table 4, we see that Canada's withdrawal from the full APEC trading bloc will worsen its welfare. Thus, even though APEC hurts Canada, the Canadians are better off in APEC than they would be if APEC is formed without them.

The results for Mexico are similar to those for Canada: The perfectly-competitive model indicates that Mexico is worse off under the full APEC trading

[Table 4] Percentage Welfare Changes [Perfectly-Competitive GTAP Model, GTAP Parameters]

	APEC	APEC-Canada	APEC-Mexico	APEC-Thailand	APEC-CM
Australsia	0.53	0.56	0.53	0.52	0.56
China/HK	0.63	0.61	0.63	0.63	0.61
Canada	−0.30	−0.74	−0.29	−0.31	−0.71
Indonesia	0.35	0.37	0.35	0.31	0.37
Japan	1.52	1.45	1.52	1.46	1.44
Korea	3.78	3.77	3.75	3.45	3.74
Malaysia	0.00	0.04	0.01	−0.34	0.05
Mexico	−0.35	−0.33	−0.53	−0.35	−0.47
Philippines	0.49	0.49	0.50	0.44	0.50
ROW	−0.19	−0.18	−0.19	−0.18	−0.18
Singapore	3.68	3.70	3.70	3.21	3.72
Taiwan	2.19	2.20	2.21	2.08	2.22
Thailand	−1.77	−1.73	−1.77	−1.41	−1.74
USA	0.08	0.08	0.07	0.08	0.07
	APEC-CMT	AF-11+Japan	AF-11+USA	AF-11	AF-11-Thailand
Australsia	0.55	0.96	0.21	0.36	0.33
China/HK	0.61	0.52	1.16	0.78	0.73
Canada	−0.71	−0.05	−0.19	−0.00	−0.01
Indonesia	0.32	0.44	0.90	0.65	0.58
Japan	1.38	0.38	−0.20	−0.12	−0.10
Korea	3.41	3.15	4.55	3.63	3.13
Malaysia	−0.30	0.88	1.39	1.36	0.80
Mexico	−0.47	0.02	−0.11	0.02	0.01
Philippines	0.45	0.35	0.85	0.23	0.10
ROW	−0.17	−0.08	−0.04	−0.02	−0.02
Singapore	3.23	3.51	6.15	5.36	3.83
Taiwan	2.11	0.81	3.05	1.02	0.78
Thailand	−1.33	−1.25	−0.94	−0.83	−0.20
USA	0.07	−0.10	0.08	−0.02	−0.02

bloc, but worse off by even more if APEC is formed without Mexico. (However, these results suggest that Mexico may be able to improve its welfare with variations of AF-11. Thus, according to the perfectly-competitive model, the overall prospects for Asian trading bloc is not quite as unfavorable for Mexico as they are for Canada.)

Canada and Mexico have very little trade with Asian nations, except Japan. This implies that Canada and Mexico may not be in a position to collect large gains from the formation of a trading bloc in the Pacific region. In addition, these two countries have large amounts of exports to the United States. If the full *APEC* trading bloc is achieved, Canada and Mexico stand to lose some of the North American market, regardless of whether they are members themselves.

The perfectly-competitive model suggests that Thailand loses for all 10 groupings of countries, as seen in Table 4. Thailand has low levels of trade with many of its Asian neighbors, such as Indonesia, the Philippines, and Korea.[9] Table 4 suggests that, according to the perfectly-competitive model, Thailand will minimize its welfare losses by staying out of the full *APEC* trading bloc.

Table 4 indicates that Japan will improve its welfare when it joins AF-11, while the United States will be worse off under AF-11+Japan. On the other hand, Table 4 also suggests that the United States will benefit when it joins AF-11. Thus, according to the simulations from the perfectly-competitive model, the United States and Japan are in very strong competition for the Asian market. Under AF-11+Japan, the U.S. is estimated to export fewer manufactured goods to Korea, Malaysia, the Philippines, and Thailand, while Japan increases its exports to these nations. In particular, Korea increases its imports from Japan in the resource, chemical, and refinery sector by 77 percent, and its light-manufacturing imports by 91 percent. On the other hand, AF-11+U.S. leads to much greater trade growth for the United States, and less for Japan.

Australia and New Zealand fare very differently, depending on whether Japan or the United States is added to the AF-11. Australia and New Zealand have a welfare gain of 0.96 percent of income under AF-11+Japan, but only a 0.21 percent gain under AF-11+U.S. This can be explained in terms of the competition of Australia and New Zealand with the U.S. in the Asian market, especially for agriculture and food products. When AF-11 agrees the formation of a trading bloc with the United States, agricultural exports from Australia and New Zealand to Korea, Taiwan, and Singapore decrease by 75 percent. Under AF-11+Japan, Australia and New Zealand have a four-fold increase in their agricultural exports to Japan.

According to the perfectly-competitive model, AF-11 may not be sustainable, since it leads to losses for Thailand. However, the "AF-11 - Thailand" column of Table 4 shows that all of the countries in this grouping are winners.

From Table 4, we see that Singapore and Korea are expected to collect the largest relative gains. These gains range from 3.1 percent to 6.2 percent of income, depending upon which of the ten scenarios is used. Singapore and Korea have high ratios of exports and imports to gross domestic output. The perfectly-competitive model's simulations suggest that, under *APEC*, the light manufacturing sectors in Korea and Singapore would increase their exports to Japan by factors of nearly three and nearly two, respectively. There are also substantial

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9 Thailand's biggest trade partners among the APEC member nations are Japan, the U.S., and Singapore. Trade between Thailand and other nations in the APEC is less than U.S. $3 billion per year.

increases in the exports from Korea and Singapore to the United States. Resource-rich ASEAN nations export increased amounts of resources and intermediate goods to Korea and Singapore, and manufactured goods are exported from Korea and Singapore to the ASEAN nations. After Korea and Singapore, the next-largest gains accrue to Taiwan.

Japan experiences welfare gains when it participates in any form of trading blocs, while losing welfare when it does not participate. Japan benefits substantially from trade creation with the economic integration. Under the full APEC trading bloc, Japan increases its exports of manufactured commodities by as much 55 percent in the light manufacturing sector.

In the preceding paragraphs, we have concentrated on the welfare effects (as simulated by the perfectly-competitive model) for Australia/New Zealand, Canada, Japan, Korea, Mexico, Singapore, Taiwan, and Thailand. Other nations have welfare changes of less than one percent. For example, the United States is anticipated to have negligible welfare changes, ranging from a low of −0.096 percent of income to a high of +0.082 percent. One reason that the effects on the United States are relatively small is that the U.S. has a big domestic market (in the base case, 94.4 percent of the goods made in the United States are sold domestically). The rest of the world suffers modest losses in every case, as a result of trade diversion.

Table 4 reports the welfare changes in percentage terms. These changes can also be measured in dollar terms. For example, Thailand loses by more than 2 billion U.S. dollars under the full-size APEC, and by more than 0.7 billion U.S. dollars under AF-11. The welfare of the rest of the world declines by U.S. $18 billion under the APEC scenario. Korea experiences its largest welfare improvement, of U.S. $12 billion, under AF-11+U.S. In absolute terms, the largest gain for any one country in these simulations is Japan's gain of $47 billion, if the full APEC trading bloc is realized.

Until now, we have focused on the simulations that use the perfectly-competitive model. The model with imperfect competition and decreasing costs is simulated with the central-case GTAP elasticities, along with the assumption that 100 firms are operating in each of the imperfectly-competitive sectors. Tables 5 and 7 summarize the welfare changes that arise from the ten groupings of countries for a trading bloc. The results reported in Table 5 are for the Cournot assumption, while those in Table 6 are for the Bertrand assumption.

The results from the imperfectly-competitive models differ significantly from those of the perfectly-competitive model. First, the simulated welfare gains are significantly larger with imperfect competition. For some regions, the welfare gains are nearly twice as large with the imperfectly-competitive model as with the perfectly-competitive model. For example, Korea's welfare improves by more than six percent of income under six of the scenarios with the imperfectly-competitive model, and Taiwan gains by more than four percent of in-

[**Table 5**] Percentage Welfare Changes [Imperfectly-Competitive Model, GTAP Parameters, Cournot Conjectures, 100 Firms]

	APEC	APEC-Canada	APEC-Mexico	APEC-Thailand	APEC-CM
Australsia	2.50	2.53	2.48	2.46	2.51
China/HK	3.03	2.95	3.01	2.99	2.93
Canada	0.26	−0.18	0.26	0.25	−0.17
Indonesia	0.92	0.91	0.90	0.82	0.89
Japan	1.52	1.42	1.50	1.46	1.40
Korea	6.76	6.67	6.67	6.14	6.59
Malaysia	1.93	1.92	1.90	1.36	1.90
Mexico	−0.15	−0.16	−0.11	−0.16	−0.09
Philippines	1.39	1.37	1.39	1.32	1.36
ROW	−0.05	−0.05	−0.05	−0.05	−0.05
Singapore	5.11	5.07	5.10	4.41	5.06
Taiwan	4.56	4.52	4.56	4.35	4.52
Thailand	−0.44	−0.44	−0.47	−0.56	−0.47
USA	0.26	0.24	0.25	0.25	0.22
	APEC-CMT	**AF-11+Japan**	**AF-11+USA**	**AF-11**	**AF-11-Thailand**
Australsia	2.47	2.89	1.46	1.46	1.42
China/HK	2.88	2.55	2.68	1.95	1.88
Canada	−0.17	−0.01	−0.04	0.01	0.00
Indonesia	0.80	0.64	0.91	0.49	0.39
Japan	1.35	0.16	−0.18	−0.16	−0.15
Korea	5.97	4.81	6.51	4.58	3.79
Malaysia	1.33	2.04	2.30	1.96	1.24
Mexico	−0.10	0.01	−0.01	0.02	0.01
Philippines	1.29	0.86	1.23	0.44	0.34
ROW	−0.05	−0.02	−0.00	−0.01	−0.00
Singapore	4.36	4.11	5.48	4.37	3.10
Taiwan	4.30	1.32	4.53	1.05	0.72
Thailand	−0.54	−0.38	−0.48	−0.57	−0.06
USA	0.21	−0.05	0.08	−0.02	−0.02

come under seven of the ten groupings of countries/regions. (In most cases, the perfectly-competitive model gives gains of less than four percent of income for Korea, and slightly more than two percent of income for Taiwan.) Significantly larger welfare gains are obtained from the imperfectly-competitive model in the vast majority of cases.

The second thing to note from Tables 5 and 6 is that the welfare gains for the largest economies (the United States and Japan) are affected relatively little when we move from the perfectly-competitive model to the imperfectly-competitive model. This is explained by the fact that the larger countries have already exploited scale economies relatively more,[10)] even without the policy change.

[10] See p. 13 in Brown and Stern (1989a).

[Table 6] Percentage Welfare Changes [Imperfectly-Competitive Model, GTAP Parameters, Bertrand Conjectures, 100 Firms]

	APEC	APEC-Canada	APEC-Mexico	APEC-Thailand	APEC-CM
Australsia	2.48	2.51	2.47	2.44	2.50
China/HK	3.00	2.92	2.98	2.95	2.90
Canada	0.24	−0.18	0.24	0.23	−0.18
Indonesia	0.90	0.89	0.88	0.81	0.88
Japan	1.49	1.39	1.48	1.44	1.38
Korea	6.67	6.59	6.58	6.05	6.51
Malaysia	1.90	1.89	1.87	1.34	1.87
Mexico	−0.17	−0.17	−0.12	−0.18	−0.09
Philippines	1.37	1.35	1.36	1.30	1.34
ROW	−0.04	−0.04	−0.04	−0.05	−0.04
Singapore	5.11	5.07	5.10	4.41	5.06
Taiwan	4.51	4.47	4.51	4.30	4.46
Thailand	−0.47	−0.47	−0.50	−0.57	−0.50
USA	0.24	0.22	0.22	0.23	0.21
	APEC-CMT	**AF-11+Japan**	**AF-11+USA**	**AF-11**	**AF-11-Thailand**
Australsia	2.46	2.89	1.46	1.47	1.43
China/HK	2.85	2.52	2.65	1.93	1.87
Canada	−0.18	−0.01	−0.04	0.01	0.00
Indonesia	0.78	0.63	0.90	0.48	0.38
Japan	1.32	0.15	−0.17	−0.16	−0.15
Korea	5.59	4.74	6.45	4.55	3.77
Malaysia	1.31	2.02	2.28	1.96	1.24
Mexico	−0.10	0.01	−0.01	0.01	0.01
Philippines	1.27	0.85	1.12	0.43	0.33
ROW	−0.04	−0.02	−0.00	−0.01	−0.01
Singapore	4.35	4.12	5.50	4.38	3.11
Taiwan	4.25	1.28	4.49	1.03	0.71
Thailand	−0.54	−0.41	−0.50	−0.58	−0.06
USA	0.19	−0.05	0.07	−0.02	−0.02

Third, Malaysia's orientation toward regional economic integration will depend crucially on the model used. Under the perfectly-competitive model, Malaysia experiences welfare losses for some scenarios, such as *APEC* minus Thailand and APEC minus *CMT*. With imperfect competition, Malaysia is predicted to have welfare gains for all ten scenarios. Since we believe that the imperfectly-competitive model has greater empirical validity, we believe that Malaysia is likely to be disposed favorably toward regional trading bloc.

Fourth, except for China/Hong Kong and Thailand, all of ASEAN and the NIEs would prefer to establish trading bloc with the United States, rather than with Japan, according to the results from the imperfectly-competitive model. The simulations suggest that these countries will experience greater benefits under AF-11+U.S. than under AF-11+Japan, if they are to have free trade with either Japan or the United States, but not with both. This also applies to the predictions from the perfectly-competitive model, except for China/Hong Kong. China/Hong Kong has higher welfare gains under AF-11+Japan than AF-11+U.S. This can be explained in terms of the fact that most countries in the region export more to the United States than to Japan, but they import more from Japan than from the United States. Thus, more trade-creation effects will be realized when these nations are involved in an trading bloc with the United States. China is different, because of its greater dependence on trade with Japan than with the United States. From the results of both the perfectly-competitive model and the imperfectly-competitive model, we can conclude that the full-size APEC trading bloc is not likely to be sustainable. However, the imperfectly-competitive model predicts a higher possibility for establishing and sustaining a very large trading bloc, since only Mexico and Thailand are predicted to experience welfare losses in this case. The perfectly-competitive model suggests that Canada and Malaysia, in addition to Mexico and Thailand, would not want to remain involved in the full APEC trading bloc.

AF-11 seems seems unlikely to be sustainable under either the perfectly-competitive model or any of the imperfectly-competitive models, because of Thailand's losses for the scenario. However, our results show that AF-11 minus Thailand is a sustainable scenario for a new trading bloc in the Pacific Basin, since all member nations under AF-11 minus Thailand are estimated to have welfare gains under both the perfectly-competitive model and the imperfectly-competitive model.

Under the imperfectly-competitive model, APEC minus Canada, Mexico, and Thailand (which contains both Japan and the United States) is a candidate for an even more broadly-based trading bloc. However, the perfectly–competitive model does not suggest that all participants would gain from the establishment of APEC minus CMT. Nevertheless, it seems possible that the AF-11 regions (excluding Thailand) might agree to eliminate import tariffs with either Japan or the United States.

Table 6 presents the changes of welfare from the simulations of the imperfectly-competitive model with our central-case parameters and the Bertrand conjecture. We have seen that the perceived demand elasticity of Bertrand firms is larger than that of Cournot firms. As a result, Cournot firms will have higher markups than Bertrand firms. Therefore, generally, the economic efficiency gains from trade liberalization will be larger under the Cournot assumption than under the Bertrand assumption. This will be clear, by comparing Tables 5 and 6. However, the magnitude of the differences is very small.

We have conducted sensitivity tests with respect to the parameters for the elasticities of substitution and the number of firms. First, we alter the elasticities of substitution to produce a 59% fixed value-added share (see the column for

"*Low*" in Table 3), while leaving the number of firms unchanged. The 59% elasticities are equal to or greater than the standard GTAP elasticities. In most cases, the welfare changes are estimated to be very similar in the simulations with 59% elasticities and in those with the standard GTAP elasticities.

In the next sensitivity test, we assume lower elasticities of substitution, while holding constant the number of firms. We find a set of elasticities, such that the common elasticities assign the fixed value-added shares to be less than 99% (since the fixed value-added shares cannot be larger than one). That is, we assume elasticities of substitution that are lower than those of the standard GTAP. The overall patterns of welfare change are similar to those which we had found earlier. The welfare changes are within two percent of the values that were simulated with the standard GTAP elasticities. The direction of welfare changes is not affected by the change in elasticities, i.e., every country that gains under a particular policy scenario with the GTAP parameters is also a winner under the 99% elasticities.

We also perform sensitivity tests with respect to the number of firms in the base case, for the imperfectly-competitive sectors. First, we lower the base-case number of firms from 100 (central case) to 25, or 50, while keeping the GTAP elasticities. The welfare changes move in the same direction, and are of about the same magnitude as in the simulations with a base case of 100 firms. As expected, the welfare changes are larger in the simulations with lower numbers of firms, since lowering the numbers of firms in the model reduces the perceived demand elasticities. Also, the simulations using the Cournot assumption give larger welfare changes than do those with the Bertrand assumption. If we increase the numbers of firms to 200 or to 1000, we once again get very similar patterns of welfare change as in the simulations with 100 firms. Once again, it appears that the imperfectly-competitive model used in this paper is fairly robust with respect to changes in the parameters. Simulations are also performed for different numbers of firms with the 59% and 99 % elasticities, and we have similar results, as described above.

V. CONCLUSION

This paper is primarily concerned with the number of economies involved in the APEC. At the Vancouver APEC meeting, by accepting three members of Russia, Peru, and Vietnam,[11] the number of APEC economies became twenty one. Naturally, it may raise a question; which countries will join a trading bloc in the region? We have simulated the effects of the formation of a trading bloc in the Pacific Rim, using a multi-sector, multi-region, computational general equilibrium model.

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[11] These nations are not considered as members of APEC in this study.

Neither the perfectly-competitive model nor any of the imperfectly-competitive models predicts that a trading bloc would be easily sustainable for the entire Asia-Pacific region, since each predicts that some regions would suffer welfare losses as a result of the policy change. However, the models do predict that some very substantially large trading bloc would be sustainable. For example, the imperfectly-competitive model suggests that a large scale trading bloc may be realized and sustained by including all of the APEC countries except Canada, Mexico, and Thailand.[12] An Asia-based trading bloc, AF-11, is demonstrated as a candidate for an alternative trading bloc under the imperfectly-competitive model, as long as Thailand is not included. The welfare losses for Thailand seem to come from its industry structure. Thailand's trade dependence (measured by the ratio of the total value of exports and imports to gross domestic product) is the lowest among the AF-11 regions.[13]

No substantial differences are caused by alternative assumptions about the firm's expectations regarding the behavior of rival firms. Generally speaking, the results from the imperfectly-competitive model are fairly robust with respect to changes in the parameters.

It is interesting to compare our results with those of Lewis, Robinson, and Wang (1995). Their results are slightly more optimistic than ours, in that they find gains for every region that participates in a new trading bloc. One reason for this is that they use a model with a higher degree of regional aggregation. For example, in their model, Indonesia, Malaysia, the Philippines, and Thailand are all grouped into a single region (called the ASEAN 4). Thus, our results regarding the losses accruing to Thailand are not necessarily at odds with theirs. In addition, the model of Lewis, Robinson, and Wang excludes Australia, Canada, Mexico, and New Zealand. Thus, our findings of losses for Canada and Mexico are also not necessarily inconsistent with their results.[14]

We should also mention one other possible source of difference between our results and those of Lewis, Robinson, and Wang. Some of their simulations are based on a model with productivity-improving externalities. This tends to increase the welfare gains very substantially, especially for the ASEAN 4. If we were to include externalities such as these in our model, it might well be possible for our simulations to suggest gains for all regions. The *CGE* model used for this study can simulate changes in productivity as the economies in the Asia-Pacific region. However, the paper does not report productivity changes

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12 The paper has some limitations in that it uses static welfare index for judging sustainability for integration in the Asia-Pacific region. Future works will include dynamic evaluation of economic integration such as technology improvement and structural adjustment, which needs dynamic *CGE* model. However, it is not technically easy to construct full dynamic *CGE* model with multi sectors and multi regions.

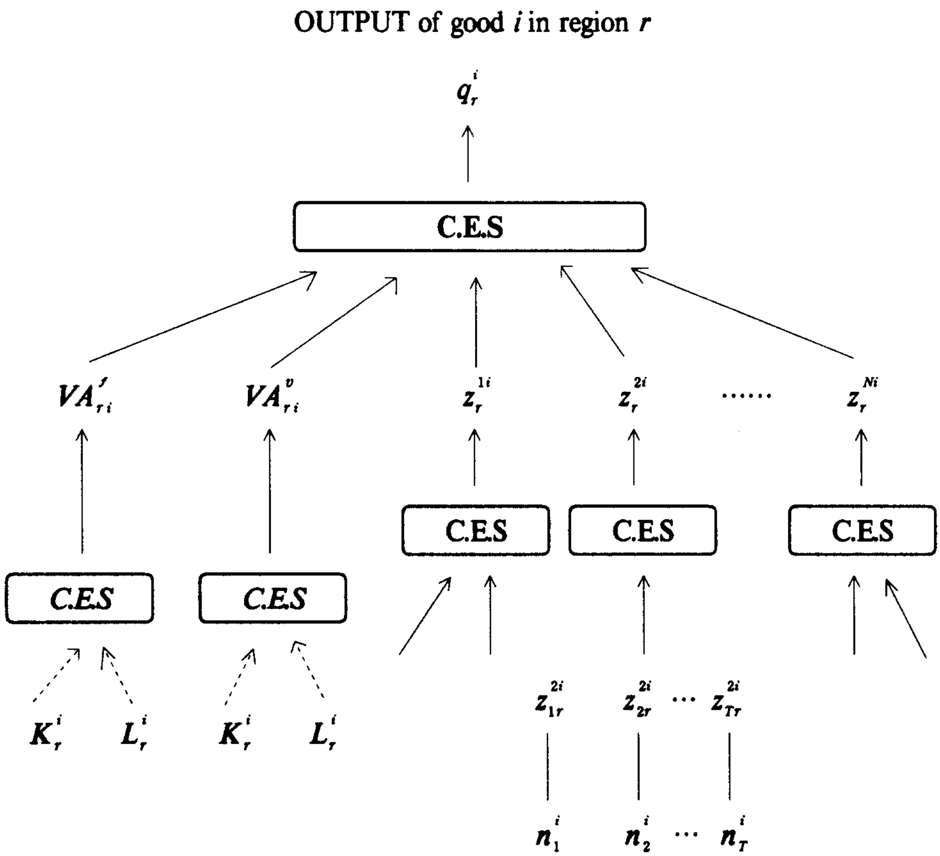
13 See Shibusawa et al. (1992), for a detailed description.

14 Lewis, Robinson, and Wang also exclude Brunei, Chile, and Papua New Guinea, even though these countries are members of APEC. We also do not model these countries separately. Instead, we combine them into the "Rest of the World" region.

since it requires some arbitrary selection of parameters such as export-productivity parameters, whose information are not available for production sectors.

In our model, we define the formation of a trading bloc as the elimination of only 55 percent of the total wedges caused by import tariffs and non-tariff barriers. This is based on our judgment that there are great practical and political difficulties with removing all of the non-tariff barriers. Consequently, the welfare changes reported here should be interpreted as fairly conservative estimates. If it proves possible to remove the non-tariff barriers more completely, the gains may be significantly larger. If, in addition, we were to include productivity-enhancing externalities, as in Lewis, Robinson, and Wang (1995), the simulated welfare gains could be very substantial indeed. Keeping these qualifications in mind, we are optimistic about the possibilities for a sustainable trading bloc in the Pacific Basin.

[Figure 1] The Production Structure for the Imperfectly-Competitive Sectors



REFERENCES

Armington, P. A theory of demand for products distinguished by place of production. *IMF Staff Papers* 16, 1969, 159-178.

Brown, D.K. Properties of computable general equilibrium trade models with monopolistic competition and foreign direct investment. Working Paper, Tufts University, 1992.

Brown, D.K., and Stern, R.M. Computable general equilibrium estimates of the gains from U.S.-Canadian trade liberalization. In Greenaway, D., Hyclack, T., and Thorton, R.J. (eds.), *Economic aspects of regional trading arragements. New York:* New York University Press, 1989a.

Brown, D.K., and Stern, R.M. U.S.-Canada bilateral tariff elimination: The role of product differentiation and market structure. In Feenstra, R.C. (ed.), *Trade policies for international competitiveness.* Chicago: University of Chicago Press, 1989b.

Cheong, Inkyo. The economic effects of Asia-Pacific economic cooperation (*APEC*) and Asia-based free trade area (AF-11): A computational general equilibrium approach. Unpublished Ph.D. dissertation, Michigan State University, 1995.

Cox, D., and Harris, R.G. Trade liberalization and industrial organization: Some estimates for Canada. *Journal of Political Economy* 93 (1), 1985, 115-145.

Cox, D., and Harris, R.G. A quantitative assessment of the economic impact on Canada of sectoral free trade with the United *States. Canadian Journal of Economics* 19 (3), 1986, 371-394.

Cox, D., and Harris, R.G. North American free trade and its implication for Canada: Results from a *CGE* model of North American trade. The NAFTA Economywide Modeling Conference, U.S.I.T.C., Washington, D.C., February, 1992, 24-25.

Dixit, A., and Norman, V. *Theory of international trade. Cambridge:* Cambridge University Press. 1988.

Dixit, A., and Stiglitz, J.E. Monopolistic competition and optimum product diversity. American *Economic Review* 67 (3), 1977, 297-307.

Harris, R.G. Applied general equilibrium analysis of small open economies with scale economies and imperfect competition. *American Economic Review* 74 (5), 1984, 1016-1032.

Harrison, G.W., Rutherford, T.F., and Tarr, D.G. Quantifying the Uruguay Round. Paper presented at World Bank Conference on The Uruguay Round and the Developing Economies, Washington D.C., January, 1995, 26-27.

Harrison, J., and Pearson, K.R. *GEMPACK user documentation,* The Impact Project and KPSOFT, Monash University, Clayton, Victoria, Australia, 1993.

Helpman, E. International trade in the presence of product differentiation, economies of scale, and monopolistic competition: A Chamberlin-Heckscher-Ohlin approach. *Journal of International Economics* 11 (3), 1981, 305-340.

Helpman, E., and Razin, A. Increasing returns, monopolistic competition, and factor movements : A welfare analysis. *Journal of International Economics* 14 (3-4), 1983, 263-276.

Hertel, T. W.(ed.), GTAP *Model Documentation.* London: Cambridge University Press, 1997.

Hunter, L., Markusen, J.R., and Rutherford, T.F. Trade liberalization in a multinational-dominated industry: A theoretical and applied general equilibrium analysis. Paper presented at the NAFTA Economywide Modeling Conference, Washington, D.C., February 24-25, 1992.

Johansen, L. *A multi-sectoral study of economic growth.* Amsterdam: North-Holland Publishing Company, 1960.

Jomini, P., Zeitsch, J.F., McDougall, R., Welsh, A., Brown, S., Hambley, J., and Kelly, J. Model structure, database, and parameters. In SALTER : *A general equilibrium model of the world economy, Vol. 1.* Canberra, Australia : Industry Commission, 1991.

Lewis, J., Robinson, S., and Wang, Z. Beyond the Uruguay Round: The implications of an Asian free trade area. *China Economic Review* 6 (1), 1995, 35-90.

Markusen, J.R., and R.M. Wigle. Nash equilibrium tariffs for the United States and Canada : The roles of country size, scale economies, and capital mobility. *Journal of Political Economy* 97 (2), 1989, 368-386.

de Melo, J., and Robinson, S. Product differentiation and the treatment of foreign trade in computable general equilibrium models of small economies. *Journal of International Economics* 27 (1-2), 1989, 47-67.

Mercenier, J., and Schmitt, N. Sunk costs, free-entry equilibrium, and trade liberalization in applied general equilibrium: Implications for 'Europe 1992'. Working Paper, University of Montreal and Simon Fraser University, 1992.

Nguyen, T.T., and Wigle, R.M. Trade liberalization with imperfect competition : The large and small of it. *European Economic Review* 36 (1), 1992, 17-35.

Norman, V.D. Assessing trade and welfare effects of trade liberalization. *European Economic Review* 34 (4), 1990, 725-751.

Prattern, C. A survey of the economies of scale. In *Studies on the economics of integration, Vol. II.* Commission of the European Communities. 1988.

Shibusawa, M., Ahmad, Z.H., and Bridges, B. Pacific Asia in the 1990s. London: Routledge, 1992.