Regional Integration Options for Central America and the Caribbean After NAFTA

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ABSTRACT

From the adoption of NAFTA to the movement toward Mercosur, the entire hemisphere faces a wide range of options for choosing a new integration agenda, one that muse be able to provide for global competitiveness and equitable growth while being politically sustainable in both the United States and Latin America. In this article, we present a computable general equilibrium (CGE) model for analyzing the effects of alternative integration strategies in the United States, Mexico, Central America, and the Caribbean. The CGE model simulates the static and dynamic effects of alternative integration scenarios on production, income distribution, and the flows of trade, capital, and labor migration. The results point to a number of essential strategic choices that will have to be made in order to generate the most optimal regional outcome. Such an outcome will be possible if and only if: (1) the United States is able to overcome a domestic political economy debate on the distribution of the gains from trade which could then allow it to provide a strategic leadership role in the region, and (2) the Latin American countries in the region resolve an almost classic "prisoner's dilemma" collective action problem. As a NAFTA partner with veto power, Mexico thus must make a key decision: to share the NAFTA market with its competitors or to block NAFTA accession and risk unilateral U.S. FTAs with Mexico's rivals and geopolitical neighbors.

INTRODUCTION

Regional integration in North America poses a particularly complex set of challenges as compared to integration in Europe and East Asia. In no other geographically contiguous area of the world do we see such wide disparities in size and level of development among countries, coupled with such a high degree of trade, investment, and labor market interdependence (Hinojosa-Ojeda 1993). Despite these challenges, many suggest that the potential risks from integration are outweighed by the growth potential from more countries joining into the dynamic process of greater North American integration, and conclude that integration is a unique opportunity which should not be missed.

This paper deals with two sets of questions, one specific to North America and the issue of integration between rich and poor countries and the second concerning the best way to achieve cooperative strategies for regional integration:

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1. What is the impact of regional integration schemes on the relationship between trade, welfare, and development in both small developing countries and large rich countries? In the case of Greater North America, what pattern of trade liberalization and structural transformation is needed to maximize growth and equity in both developed and developing countries?
2. What problems of collective decision making and political economy will have to be overcome to negotiate and implement an optimal regional integration strategy? What coordination of policies and new or reformed institutional mechanisms are needed to accomplish this?

By means of computable general equilibrium (CGE) modeling and a political economy framework, we analyze how the potential costs and benefits of integration can be distributed among countries, sectors, and social classes. Our Greater North America Free Trade Agreement (GNAFTA-CGE) model consists of 11 sectors, four social groups, and four subregions (plus the rest of the world), linked though trade, capital, and migration flows. We consider a series of alternative scenarios, starting with a base scenario that examines the impact of NAFTA on Central America and the Caribbean as well as on the United States and Mexico. We then explore a number of strategic trade responses that countries in the region could adopt with respect to NAFTA, including a Mexico-Central America FTA, a U.S.-Central America FTA, or a U.S.-Caribbean FTA. We also evaluate a unilateral opening of the U.S. market, in the form of an extended Caribbean Basin Initiative (CBI). Finally, we contrast these alternative "hub-and-spoke" approaches with liberalization of trade among all countries throughout greater North America in an expanded NAFTA.

This article is organized as follows. The next section reviews the structure and dimensions of asymmetrical interdependence within greater North America and describes the base data used in our GNAFTA-CGE model. The third section lays out the alternative integration scenarios to be considered. The fourth section discusses modeling approaches, including theoretical issues of trade liberalization and regional integration, and develops the GNAFTA-CGE model. This section also presents the results from our GNAFTA-CGE modeling of alternative scenarios for regional integration. The fifth section presents our conclusions.

AN OVERVIEW OF REGIONAL INTERDEPENDENCE
Trade and Investment Interdependence

Table 1 presents major structural indicators for the four regions of greater North America, including total and per capita GDP, aggregate trade flows, employment structure, and data on population, foreign debt, investment, and flows of visitors. The U.S. economy dwarfs the other regions in absolute size as well as per capita GDP. GDP in Mexico, by far the largest developing economy in the region, is less than 6% of the United States, while the aggregate economies of Central America and of the Caribbean are each less than 0.5% the size of the U.S. economy. Per capita income in the United States is roughly six times higher than in Mexico, 20 times higher than in the Caribbean, and 23 times the level of Central America. The United States is the primary source of foreign investment in the region, with $73.2 billion invested in a wide range of non-bank activities in 1991 (U.S. Department of Commerce 1993a). U.S. direct investment in Mexico in 1991 was almost $2.4 billion, representing more than half of all foreign investment in Mexico that year, and U.S. cumulative investment was equal to more than $28 billion (U.S. Chamber of Commerce 1992, 1993a). Mex-

TABLE 1. Size and Structure of the Greater North Amercian Economies

	United States	Mexico	Central Mexico	Caribbean
GDP (billion US$)[a]				
Market exchange rate GDP (1992)[b]	5,950.7	333.8	27.9	22.8
Market exchange rate per capita GDP (1992)[b]	23,548.0	3,728.0	1,019.0	1,197.0
Purchasing power parity per capita GDP (1992)[c]	23,548.0	7,170.0	2,507.0	2,813.0
Trade Flows (percent of GDP)[d]				
Total exports	7.35	14.48	17.24	44.53
Total imports	10.36	11.45	24.03	45.84
Intra-regional exports	0.48	9.04	9.32	16.28
Intra-regional imports	0.46	8.51	10.94	23.10
Debt/Foreign Investment (billion US$)				
Total foreign debt (1991)[e]	455.0	101.74	22.54	14.96
Net annual FDI (1991)[e]	-0.02	4.74	0.30	0.67
Intra-regional annual FDI (1991)	0.35[f]	2.40[f]	n.a.	n.a.
Intra-regional cumulative FDI (1991)[f]	n.a.	28.00	2.20	43.00
Travel/Migration (million persons)				
Total visitors received (1990)[g]	39.8	6.4	1.2	2.7
Intra-regional visitors (1990)	3.0[g]	5.6[h]	0.8[h]	1.7[h]
Border crossings (millions, 1991)[h]	248.0	n.a.	n.a.	n.a.
U.S. apprehensions of undocumented migrants by country of origin (1991)[h]	n.a.	1.13	.023	.010
Population[c]				
Total population (1992)	252.7	89.5	27.3	19.0
Population, ages 15-64 (1992)	165.8	53.7	14.6	11.3
Employment Structure (percent of total)[d]				
Rural labor	1.4	27.8	41.5	44.1
Urban unskilled labor	17.3	16.9	17.7	6.3
Urban skilled labor	48.6	31.7	21.6	37.0
White-collar workers	32.7	23.6	16.6	17.2

Note: Central America GDP figures reflect data for Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua; Caribbean figures reflect data for Barbados, the Dominican Republic, Guyana, Haiti, Jamaica, Suriname, and Trinidad and Tobago.

Sources: [a] IMF (1993b).
[b] World Bank (1993a).
[c] Hinojosa-Ojeda, Lewis, and Robinson (1994), Appendix 3.
[d] U.S. debt data from IMF (1993b); other data from World Bank (1993b).
[e] U.S. Department of Commerce (1993a, 1993b).
[f] World Tourism Organization (1992). Visitors include tourists, business travellers, and others legally admitted but who cannot work; Caribbean figure excludes additional 1.56 million visitors to the Bahamas.
[g] U.S. Immigration and Naturalization Service (1992).
[h] U.S. Chamber of Commerce (1992).

ican investment in the United States is much lower, but Mexican investors have an important presence in certain markets.[1] The United States is the most important source of foreign investment in the Caribbean Basin, with assets in the CBERA-eligible countries totalling almost $43 billion, although most of this is concentrated in finance (excluding banking), insurance, and real estate.[2] U.S. cumulative investment in Central America (other than Panama) totaled roughly $2.2 billion in 1991 (U.S. Department of Commerce 1993a).

Throughout the region, while much of U.S. investment is in finance, insurance, and real estate, a large number of manufacturing jobs are also supported. Many of these manufacturing jobs involve the assembly of U.S.-made components for export, an operation for which Mexico and the Caribbean Basin countries are the principal locations. These in-bond manufacturing activities are important for both the United States and host economies. For U.S. companies, they represent an important cost-cutting measure, allowing goods to be sold at competitive prices in the U.S. market and abroad. This increased competitiveness could preserve jobs in the United States that otherwise would be lost to foreign producers. In 1986, export processing zones in Mexico and the Caribbean Basin were responsible for 360,000 jobs; the 250,000 jobs in Mexican maquiladoras represented 1% of total employment and roughly 11% of manufacturing jobs (Schoepfle and Párez-López (1990). The value of export-assembly products imported into the United States from the Caribbean Basin[3] doubled between 1983 and 1989, to $1.5 billion, of which Central American products accounted for 30%; the estimated value added in these exports was 32%, or roughly $0.5 billion in 1989 (Schoepfle and Párez-López 1992). U.S. investors have played a particularly important role in developing the apparel export industry in the Caribbean Basin, mainly due to special provisions allowing for production-sharing arrangements. In both Jamaica and Honduras, for example, U.S. apparel companies accounted for roughly one quarter of total direct investment in the sector in 1991 (USITC 1992).

Mexico, Central America and the Caribbean depend much more on intra-regional exports than does the United States, and these economies are more open to international trade. Table 2 provides more detail on the strength of bilateral trade relations in the region. Mexico represents the United States's largest trading relationship with a developing country, and its third most important trading partner overall, after Canada and Japan but ahead of Germany. This trade relationship is an important source of employment, with roughly 800,000 U.S. jobs linked directly or indirectly to gross exports to Mexico. (See Hinojosa-Ojeda, Lewis, and Robinson 1994, App. 1, for a description of the methodology and data used.) The U.S. dependence on Mexico is much more limited, however. Less than 5% of U.S. exports go to Mexico and Mexican products represent only 3.5% of U.S. imports.

Links with the Caribbean Basin, while smaller in absolute terms, are also important and exhibit broad similarities to the U.S.-Mexico relationship. U.S. exports to Caribbean Basin Initiative beneficiary countries grew by 79% from 1986 to 1992, converting a slight trade deficit into a $1.5 billion surplus. Exports to the region support over 200,000 U.S. jobs.

Despite the dependence of both Central America and the Caribbean on imports and exports, trade *between* these two regions is almost nonexistent. Intra-regional trade *within* Central America is sizeable, accounting for 14% of the region's total exports in 1992 (IMF 1993a). However, this is significantly lower than the 1980 level of 25%, before trade and the regional economy were devastated by war and monetary crises (Saborio 1992a).

Migration and Remittance Flows

Regional interdependence is also reflected by movements of people between countries. Table 1 shows young populations in the region and the predominance of rural labor occupations in Mexico, Central America, and the Caribbean. Except for the United States, the agricultural workforce is associated with relatively low productivity and income levels. In the United States, agricultural employment is 2.2% of the labor force and produces 1.5% of GDP. However, in Mexico agricultural employment is 27.9% of the total, producing only 8% of GDP; in Central America, 43.5% producing 22.4%; and in the Caribbean, 44% of

TABLE 2. Bilateral Export and Import Flows (percent of total)

	United States	Mexico	Central America	Caribbean	Other Latin America
Export Flows					
United States	n.a.	60.6	41.0	32.8	28.4
Mexico	4.89	n.a.	0.5	0.0	1.1
Central America	0.6	0.3	11.6	0.1	0.8
Caribbean	1.2	0.5	0.9	3.6	0.8
Rest of Latin America	4.8	0.8	0.1	0.1	14.8
Rest of World	88.7	36.7	45.9	63.4	54.1
Japan	12.4	5.5	2.6	1.7	6.2
EC	24.9	13.2	22.9	20.3	26.7
Others	51.4	18.0	20.5	41.5	21.1
Totals	100.0	100.0	100.0	100.0	100.0
Import Flows					
United States	n.a.	74.3	30.2	44.8	26.2
Mexico	3.5	n.a.	6.0	1.6	1.6
Central America	0.4	0.1	9.2	0.5	0.1
Caribbean	0.6	0.0	0.2	3.5	0.2
Rest of Latin America	5.7	0.01	0.4	0.2	20.4
Rest of World	89.8	24.6	54.1	49.4	51.6
Japan	18.0	4.6	6.7	6.1	6.7
EC	18.5	16.1	13.8	14.2	21.6
Others	53.3	3.9	33.6	29.1	23.3
Totals	100.0	100.0	100.0	100.0	100.0

Note: Numbers may not add to total due to rounding.
Sources: United States, Mexico, Central America, Caribbean, and totals: 1990 Social Accounting Martrices estimated in Hinojosa-Ojeda, Lewis, and Robinson (1994). Rest of Latin Anerica and rest of world: IMF (1993a).

the workforce produces only 12.5% of GDP. Table 3 summarizes migration and remittance data for these regions.

Trade Barriers

Despite the high volume of trade in the region, there are a number of import barriers such as tariffs, quotas, and nontariff barriers, which are presented in Table 4. Mexico has an average tariff rate on U.S. imports more than three times higher (7.9%) than that of U.S. protection on imports from Mexico (2.6%). Both Mexico and the United States place high tariffs on certain agricultural products. Average barriers in Central America and the Caribbean are significantly higher, at 19.3% and 21.7% respectively, for U.S. goods. Both regions have high import barriers on light manufacturing, with a 46% tariff making this Central America's most protected sector. The Caribbean region also makes it difficult to access the agricultural program crops and consumer durables markets, with trade-weighted average tariffs of 36% and 34%, respectively.

Caribbean reliance on the United States for capital goods, intermediate goods, and other light manufacturing products is considerable, despite relatively high tariffs (between 13% and 28%). For Central America, U.S. trade shares are lower but import barriers are higher in the light manufacturing and intermediate goods sectors. There is thus ample scope for U.S. expansion into these markets, although while free trade would lower the costs of these

TABLE 3. Foreign Migration to the United States and Remittances to Migrant-Sending Countries

Country/Region (U.S.$)	Immigrant Stock (thousands)	Migrant Flow (thousands)	Total Annual Remittances (U.S.$ millions)	Remittances per Migrant
Mexico				
Legal	4,298.0	56.5		
Undocumented	736.0	118.0		
Total	5,034.0	174.5	$3,371[a]	$880[a]
Central America				
Legal	1,134.0	30.4		
Undocumented	385.0	49.0		
Total	1,519.0	79.4	$1,123[b]	$739[b]
Caribbean				
Legal	1,983.3	84.9		
Undocumented	231.0	28.0		
Total	2,169.3	112.9	$2,523[c]	$1,163[c]

Sources: Legal stock figures from U.S. Department of Commerce, Bureau of Census, 1990 Census Special Tabulations. Undocumented stock figures from 1993 INS Statistics Division estimates. Legal flow from U.S. Immigration and Naturalization Service (1992), adjusted to take into account IRCA entries
  [a] Based on data from Lozano (1993); figure using Immigrant Stock column will be different.
  [b] Calculated from CEPAL 91991), Bureau of the Census (1990), and INS (1993).
  [c] Calculated from Portes and Guarnizo (1991), Bureau of the Census (1990), and INS (1993).

items and help stimulate investment and production in other sectors, Central America and the Caribbean would run the risk of becoming even more dependent on the United States for intermediate and capital goods and never developing their own sectors.

About half of the U.S. exports of food corn are destined for Mexico, Central America, and the Caribbean, with all three areas purchasing all or most of their imports of this product from the United States. These trade flows, along with the huge productivity differences, suggest the enormous disruptive potential of liberalization of agriculture, particularly in the food corn sector.

MODELING REGIONAL ECONOMIC INTEGRATION

The Greater North America Free Trade Agreement CGE Model

The model is based on a multi-regional CGE framework.[4] Following Hinojosa-Ojeda, Robinson, and Wolff (1992), our GNAFTA-CGE model consists of an 11-sector, five-region general equilibrium model composed of four single subregional CGE models (Mexico, Central America, Caribbean, and the United States) interconnected through trade and migration flows.[5] The GNAFTA-CGE model combines four types of innovations compared to the typical multi-country CGE trade model. First, our GNAFTA-CGE model allows for rural-urban migration within each economy, as well as international migration among regions. Second, it models agricultural policies of both the United States and Mexico to investigate the linkages between trade barriers in agriculture and social policy. Third, when modeling import demands, the Almost Ideal Demand System (AIDS) specification is adopted. This is because an AIDS specification, in contrast to the standard constant elasticity of substitution (CES) function, allows expenditure elasticities to be different from one. Fourth, to capture the potential dynamic effects of trade liberalization, the GNAFTA-CGE

model can include equations for generating positive externalities through both export expansion and the importation of new capital goods. These new features are described below.

The model data base consists of social accounting matrices (SAMs) for each country, including data on trade flows.[6] The development of the database is documented elsewhere (Hinojosa-Ojeda, Lewis, and Robinson 1994, App. 3). The SAM starts from multisectoral input-output data, which are expanded to provide information on the circular flow of income from producers to factors to "institutions," which include households, enterprises, government, a capital account, and trade accounts for each partner country and for the rest of the world. These institutions represent the economic actors whose behavior and interactions are described in the CGE models. The parameter estimates for the sectoral production functions, consumer expenditure functions, import aggregation functions, and export transformation functions were drawn from a variety of sources. The various parameters used in the model represent point estimates for the base year (1988) and the model was benchmarked so that its base equilibrium solution exactly replicates the base data.

Features of the Basic Country Model

Each subregional or "country" CGE model follows closely the standard theoretical specification for trade-focused CGE models.[7] In addition to 11 sectors, the model has six factors of production (four labor types, land, and capital). Output-supply and input-demand equations are specified for each sector. Output is produced according to a CES production function of the six primary factors, with intermediate inputs used in fixed proportions. Producers are assumed to maximize profits, implying that each factor is demanded so that marginal product equals marginal cost. However, factors are not assumed to receive a uniform wage or "rental" across sectors. Based on data for the base year, we impose sectoral factor market distortions that fix the ratio of the sectoral return to a factor relative to the economywide average for that factor.[8]

The model only determines relative prices and the absolute price level must be set exogenously. Specifically, the aggregate consumer price indices in each subregion are set exogenously, thus defining the *numeraire*. The advantage of this choice is that solution wages and incomes are in real terms. The solution exchange rates in the subregions are also in real terms and can be seen as equilibrium price-level-deflated (PLD) exchange rates, using the country consumer price indices as deflators.[9] World prices are converted into domestic currency using the exchange rate, including any tax or tariff components. Cross-trade price consistency is imposed, so that the world price of country A's exports to country B is the same as the world price of country B's imports from country A. For export sectors with perfect supply elasticities, domestic and export prices must be equal. The composite demand "Armington" good is an aggregation of sectoral imports and domestic goods supplied to the domestic market. Sectoral output is a CET aggregation of total supply to all export markets and goods sold on the domestic market.

Each "country" model traces the circular flow of income from producers, through factor payments, to households, government, and investors, and finally back to demand for goods in product markets. The country models incorporate official tariff revenue which flows to the government, and the tariff equivalent of nontariff barriers which accrues as rents to the private sector. Each economy is also assumed to have a number of domestic market distortions. There are sectorally differentiated indirect taxes and value-added taxes, with nonuniform rates, as well as social security, household, and corporate income taxes. House-

TABLE 4. Average Bilateral Protection Rates by Sector and Region (percent)

	Tariff on Imports to United States from				Tariff on Imports to Mexico from			
	Mexico	Central America	Caribbean	ROW	United States	Central America	Caribbean	ROW
Corn and feedgrains	18.0	11.9	11.9	11.9	45.0	45.0	45.0	45.0
Other program crops	0.7	1.5	1.5	1.5	12.9	7.7	14.2	14.2
Fruits and vegetables	10.5	3.1	3.1	3.1	12.5	3.4	11.9	11.9
Other agriculture	8.4	9.2	9.2	9.2	8.9	0.3	11.6	11.6
Food processing	10.8	27.9	27.9	27.9	8.2	8.8	12.8	12.8
Light manufacturing	7.1	13.7	13.7	13.7	8.1	8.6	10.1	10.1
Oil	0.5	1.2	1.2	1.2	8.8	1.2	8.3	8.3
Intermediates	1.7	11.0	11.0	11.0	8.0	1.7	8.6	8.8
Consumer durables	2.4	2.3	2.3	2.3	12.0	1.8	10.0	10.0
Capital goods	2.4	2.4	2.4	2.4	12.7	3.2	11.6	11.6
Services	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Average	2.6	5.3	8.5	5.7	7.9	1.9	9.3	10.0

	Tariff on Imports to Central America from				Tariff on Imports to the Caribbean from			
	United States	Mexico	Caribbean	ROW	United States	Mexico	Central America	ROW
Corn and feedgrains	10.1	10.1	10.1	10.1	18.2	18.2	18.2	18.2
Other program crops	0.0	0.0	0.0	0.0	35.6	35.6	35.6	35.6
Fruits and vegetables	0.0	0.0	0.0	0.0	28.9	28.9	28.9	28.9
Other agriculture	0.0	0.0	0.0	0.0	13.7	13.7	13.7	13.7
Food processing	15.0	15.0	15.0	15.0	19.6	19.6	19.6	19.6
Light manufacturing	45.9	45.9	45.9	45.9	27.7	27.7	27.7	27.7
Oil	17.0	17.0	17.0	17.0	19.7	19.7	19.7	19.7
Intermediates	23.6	23.6	23.6	23.6	13.3	13.3	13.3	13.3
Consumer durables	15.2	15.2	15.2	15.2	34.3	34.3	34.3	34.3
Capital goods	11.8	11.8	11.8	11.8	20.5	20.5	20.5	20.5
Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average	19.3	23.0	28.4	16.3	21.7	20.3	20.3	12.2

Notes: "Tariff" figures include both tariffs and non-tariff barriers (NTBs) for the United States and Mexico only. "Average" is weighted by trade flows.

Sources: United States tariffs from U.S. Department of Commerce; U.S. non-tariff barriers from U.S. Department of Agriculture and Clark and Zarrilli (1993). For other countries: UNCTAD, World Bank country reports and staff estimates.

holds in each economy have Cobb-Douglas expenditure functions. Real investment and government consumption are fixed exogenously, which implies that private consumption demand is the only component of domestic "absorption" that can adjust to changing external conditions.

One implication of distortions is that policy choices must be made in a second-best environment. We do not consider scenarios which remove all distortions. Taxes and factor-market distortions are assumed to remain in place, along with import barriers against the rest of the world. In this second-best environment, economic theory gives little guidance as to the welfare implications of FTAs.[10]

Sectoral export-supply and import-demand functions are specified for each country. The GNAFTA-CGE model specifies that goods produced in different countries are imperfect substitutes. At the sectoral level in each country, buyers differentiate goods by country of origin and exporters differentiate goods by market. Exports are supplied according to a CET function between domestic sales and total exports, and allocation between export and domestic markets occurs in order to maximize revenue from total sales. The rest of the world is simply a large supplier of imports to, and buyer of exports from, each of the four American subregions at fixed world prices. The rest of the world has upward-sloping export-supply curves and downward-sloping import-demand curves.

The model incorporates three different kinds of trade-productivity links. The first relates productivity in production to imports of intermediate and capital goods and the productivity increase depends on the share of intermediates in production. The second is an externality associated with export performance in which higher export growth translates into increased domestic productivity. Finally, there is an externality associated with aggregate exports such that increased exports make physical capital more productive, an effect which is "embodied" in the capital stock input that feeds into the production process.

Standard practice in CGE modeling is to use a constant elasticity of substitution (CES) function for the import aggregation equation, which is very restrictive and leads to empirical problems.[11] In a multicountry model, the assumption of fixed sectoral share parameters in the CES function largely determines the volume and direction of world trade, with price changes affecting shares only at the margin. It also constrains the income elasticity of demand for imports to unity in every sector, so that market penetration cannot occur without major changes in relative prices. Given that only relative prices affect trade shares, the model tends to endow countries with unrealistic market powers in their export markets, and with national welfare gains flowing from restricting trade. In addition, with all income elasticities equal to one, such models cannot handle the major expansion in trade that has characterized the postwar era, during which the volume of world trade has grown much faster than world GDP.

As a result of these limitations, modelers have begun to explore other formulations, while maintaining the fundamental assumption of product differentiation. The GNAFTA-CGE model, uses a flexible specification of the demand system called the almost ideal demand system (or AIDS).[12] The major advantage of the AIDS approach is that it includes an income effect, which is empirically very important. It allows the GNAFTA-CGE model to exhibit trade creation, permitting trade to grow more rapidly than aggregate GDP *without* major swings in relative international prices. The AIDS specification generates more realistic volume and terms-of-trade effects.

While trade flows provide one important link between the subregional CGE models, another channel occurs through factor migration flows. Migration among all the countries

in the region is assumed to be a function of wage differentials, with international migration occurring in the rural and urban unskilled labor categories. Equilibrium international migration levels maintain a specified ratio of real wages between the two labor markets in any two countries. In addition, there is rural-urban migration within Mexico, Central America and the Caribbean which maintains a given wage ratio between the rural and urban unskilled labor within each country or subregion. Migration flows generated by the GNAFTA-CGE are *changes* in migration from base levels.

The GNAFTA-CGE model has a medium to long-run focus, which allows factor markets to adjust. While sectoral employment may change, aggregate employment is assumed to remain unchanged (except for the migration flows discussed above). In our simulations, we do not explicitly consider how long it might take the economy to reach a new equilibrium, but a model's time horizon is "long enough" for full adjustment to occur.

GNAFTA–CGE MODEL RESULTS

Description of Alternative Scenarios

We are interested in the *economic* implications of alternative scenarios of regional integration. We begin with a review of the possible impact of NAFTA on the countries in the region, followed by a variety of possible strategic trade responses, including a Mexico-Central America FTA, a U.S.-Central America FTA, and a U.S.-Caribbean FTA. Finally, we consider the alternative of a unilateral opening of the U.S. market through an extended Caribbean Basin Initiative (the so-called NAFTA parity agreement).

Table 5 presents the alternative scenarios. The results of each scenario are compared to a base calibrated with the pre-NAFTA structure of protection in the region. For each scenario, the "a" version represents the comparative statics effects, while the "b" version adds the potential dynamics effects of the scenario.

TABLE 5. Description of GNAFTA–CGE Model Scenarios

Number	Scenario	Description
1	NAFTA	Remote tariffs and nontariff barriers between the U.S. and Mexico, but not with Central America, the Caribbean, and Rest of World.
2	Mexico hub-and-spoke model 1	NAFTA plus a Mexico–Central America FTA.
3	Mexico hub-and-spoke model 2	NAFTA plus a Mexico–Central America and a Mexico–Caribbean FTA.
4	U.S. hub-and-spoke model 1	NAFTA plus a U.S.–Central America FTA.
5	U.S. hub-and-spoke model 2	NAFTA plus a U.S.–Caribbean FTA.
6	U.S. hub-and-spoke model 3	NAFTA plus the Caribbean Basin Initiative, where the U.S. unilaterally removes tariff barriers.
7	U.S. hub-and-spoke model 4	NAFTA plus a U.S.–Caribbean and a U.S.–Central American FTA.
8	North American regional integration	Remove all tariffs and barriers among the U.S., Mexico, Central America, and the Caribbean.

Notes: Version A of each scenario (e.g., 1A) includes only static effects; Version B (e.g., 1B) includes dynamic impacts as well.

Scenario Results

The following tables present the comparative static and dynamic impacts of the eight scenarios. What is most apparent is the very small impact of regional liberalization on the United States. By contrast, the impacts on the other countries in the region are roughly one to two orders of magnitude more significant.

The Impact of NAFTA

In Scenario 1, which represents NAFTA, the comparative statics impacts (Scenario 1a) are tiny for both Mexico and the United States, while the dynamic impacts (Scenario 1b) are quite significant for Mexico (4.7% of GDP). While still small for the United States, the dynamic impact of NAFTA represents a relatively larger improvement over the comparative statics effects. While our results suggest that NAFTA would have a negative impact on both Central America and the Caribbean, these effects are very small in terms of real GDP. (Table 6 indicates a −.004% fall.) Once the full dynamic effects of NAFTA are incorporated, the negative impact on countries outside of NAFTA grows more significant (Table 6 shows the Caribbean losing close to a half a percent of GDP).

This negative outcome is due to increased concentration of trade between the NAFTA partners and diversion of imports and exports from Central America and the Caribbean. As Table 7 shows, in the static experiments U.S. and Mexican intra-North American exports increase by 5.4% and 5.6%, respectively, but decline by 0.2% for Central America and by 0.1% for the Caribbean. In the dynamic results, U.S. intra-regional exports increase by 10.8% while Mexican intra-regional imports rise by 14.9%. Intra-regional imports by Central America and the Caribbean fall further in the dynamic NAFTA scenario, as do extra-regional exports. In both the comparative static and dynamic results, we also see a decline in total exports and imports by Central America and the Caribbean (Table 6). This decline is due to both trade diversion and a decline in extra-regional exports by Central America and the Caribbean.

It is clear that NAFTA generates more trade creation than diversion. Total North American intra-regional exports shown in Table 7 grow by 4.9% and 7.6%, far outweighing both the decline in Central American and Caribbean exports and the decline in trade with the rest of the world. While total North American extra-regional imports and exports do decline slightly, there is still much more North American trade created than there is trade diverted from the rest of the world. Mexico actually increases its exports to the United States and beyond North America due to NAFTA, but not to Central America or the Caribbean (Table 8). The results in Table 7 indicate that the dynamic effects of NAFTA actually reduce the comparative static trade diversion with the rest of the world, due primarily to increased extra-regional imports and exports by Mexico.[13]

The impact on factor returns and real wages shown in Table 9 also demonstrates the slightly negative effect that NAFTA produces in Central America and the Caribbean. The rate of return to capital increases slightly in the United States and more so in Mexico, but it falls slightly throughout the rest of the region. U.S. and Mexican labor gains with NAFTA (except for a large fall in Mexican rural wages in the comparative static Scenario 1a), while Central American and Caribbean labor loses slightly with NAFTA (except for a slight rise in rural wages). The movement in urban wages is largely a function of the rise in two-way trade in manufacturing goods between the United States and Mexico. NAFTA

generates a decline in exports, output, and wages in these sectors throughout the rest of the region. Most comparative static effects are augmented in the dynamic scenario.

Movements in rural wages (and returns to land) in the comparative static case are predominantly a function of the changing pattern of corn trade in the region. NAFTA causes corn production to fall dramatically in Mexico while U.S. corn production and exports increase significantly. In Central America and the Caribbean, trade diversion causes corn production to increase in order to meet a domestic demand gap due to the decline in U.S. corn exports. This positive corn effect more than compensates for the trade diversion in fruits and vegetables experienced by Central America and the Caribbean and, thus, generates rural wage growth. In contrast, the rise in two-way trade in fruits and vegetables among the NAFTA partners is not enough to offset corn-related declines in Mexican rural wages.[14]

Migration and labor market adjustment are heavily influenced by changes in sectoral production and real wages. As Table 10 shows, in Mexico rural outmigration surges, bypassing the Mexican urban labor market to affect U.S. rural and urban unskilled labor markets. Increased competition within U.S. migrant-receiving labor markets, combined with the relative rise in rural wages in Central America and the Caribbean, results in some return migration to those countries and, thus, a softening of bilateral Mexico-U.S. migration pressures. Migration leads to a relative decline in real wages for rural workers and urban unskilled workers throughout the region, except for Mexico where large-scale outmigration raises real wages.

Hub-and-Spoke Scenarios

Scenarios 2 through 7 present alternative "hub-and-spoke" configurations of trade liberalization between the hub country and various spoke countries but not among the spoke countries. The macro results in Table 6 suggest a type of zero-sum game among the potential spoke countries. While it is beneficial for either Central America or the Caribbean to become the new spoke in the region, any such arrangement has a negative impact on the country or region that is left out. When Central America becomes the spoke in scenarios 2 and 4 through free trade agreements with Mexico and the United States, respectively, its GDP, exports and real wages increase relative to the NAFTA base scenario. However, GDP, exports, and real wages in the Caribbean fall relative to the already negative impact of NAFTA. In Scenario 5, the Caribbean replaces Central America as the new spoke, and Central America suffers similar ill effects.

Scenarios 2, 4, and 5 reveal a potential regional conflict rooted in the advantages a region obtains from exclusive free trade agreements with any NAFTA country, but preferably with the United States. Mexico, meanwhile, has incentives to maintain its own preferential access to the U.S. market. The externalities that are part of the dynamic scenarios serve to exacerbate the conflicts generated by the comparative statics.

The CBI NAFTA-Parity Bill has been suggested as a way of resolving the potential conflict between CBI members in Central America and the Caribbean, while mitigating the negative effects of NAFTA. The results of Scenario 6 suggest, however, that CBI is not as beneficial to either Central America or the Caribbean as their own individual FTAs with the United States. This is primarily due to protectionism in Central America and the Caribbean under CBI, which limits their access to cheap imports and, thereby, their ability to export to the United States. Again, the dynamic results accentuate the comparative statics.

TABLE 6. GDP, Exchange Rates, and Trade Flows (percent change from base)

Static Scenarios	NAFTA (1a)	NAFTA + MX/CA FTA (2a)	NAFTA + MX/CA + MX/CB FTAs (3a)	NAFTA + US/CA FTA (4a)	NAFTA + US/CB FTA (5a)	NAFTA + CBI (6a)	NAFTA + US/CA + US/CB FTAs (7a)	Region-wide Integration (8a)
Real GDP								
United States	0.0008	0.0008	0.0008	0.001	0.0008	0.001	0.001	0.001
Mexico	0.146	0.145	0.143	0.145	0.142	0.145	0.141	0.138
Central America	-0.004	-0.005	-0.005	0.021	-0.006	0.014	0.020	0.020
Caribbean	-0.004	-0.004	-0.007	-0.005	0.218	0.203	0.217	0.241
Total	0.006	0.006	0.006	0.007	0.007	0.007	0.007	0.007
Real Exchange Rate								
United States	0.03	0.03	0.03	0.05	0.06	0.07	0.07	0.07
Mexico	1.57	1.56	1.55	1.57	1.56	1.57	1.56	1.54
Central America	-0.06	0.65	0.65	1.37	-0.05	-1.67	1.37	1.92
Caribbean	-0.17	-0.16	-0.06	-0.18	1.66	-2.44	1.65	1.84
Total Real Exports								
United States	0.17	0.17	0.17	0.21	0.26	0.27	0.30	0.30
Mexico	3.69	3.72	3.75	3.68	3.66	3.69	3.66	3.72
Central America	-0.13	0.37	0.37	4.21	-0.22	1.91	4.12	4.76
Caribbean	-0.10	-0.10	0.01	-0.11	5.50	2.65	5.48	5.67
Total	0.42	0.43	0.43	0.50	0.63	0.60	0.72	0.73
Total Real Imports								
United States	0.12	0.12	0.12	0.15	0.18	0.19	0.21	0.21
Mexico	4.64	4.68	4.72	4.63	4.61	4.64	4.60	4.67
Central America	-0.10	0.27	0.27	3.07	-0.16	1.40	3.01	3.47
Caribbean	-0.10	-0.10	0.01	-0.11	5.55	2.68	5.54	5.73
Total	0.31	0.31	0.32	0.37	0.46	0.44	0.52	0.54

Dynamic Scenarios	NAFTA (1b)	NAFTA + MX/CA FTA (2b)	NAFTA + MX/CA + MX/CB FTAs (3b)	NAFTA + US/CA FTA (4b)	NAFTA + US/CB FTA (5b)	NAFTA + CBI (6b)	NAFTA + US/CA + US/CB FTAs (7b)	Region-wide Integration (8b)
Real GDP								
United States	0.043	0.043	0.042	0.051	0.072	0.064	0.079	0.078
Mexico	4.780	4.816	4.854	4.777	4.759	4.785	4.757	4.832
Central America	-0.138	0.231	0.227	2.432	-0.171	1.025	2.398	2.834
Caribbean	-0.427	-0.431	-0.224	-0.432	3.015	1.132	3.011	3.291
Total	0.216	0.218	0.219	0.234	0.255	0.247	0.273	0.277
Real Exchange Rate								
United States	0.03	0.04	0.04	0.05	0.06	0.08	0.08	0.08
Mexico	0.04	0.03	0.03	0.03	0.02	0.03	0.01	1.72
Central America	-0.18	0.70	0.70	3.25	-0.21	-0.51	3.22	3.98
Caribbean	-0.35	-0.35	-0.20	-0.37	2.55	-1.99	2.53	2.80
Total Real Exports								
United States	0.24	0.24	0.24	0.29	0.37	0.37	0.42	0.42
Mexico	9.13	9.19	9.26	9.12	9.09	9.14	9.08	9.22
Central America	-0.22	0.60	0.60	6.42	-0.31	2.84	6.32	7.37
Caribbean	-0.38	-0.38	-0.13	-0.40	7.84	3.41	7.82	8.20
Total	0.87	0.89	0.90	0.99	1.18	1.11	1.30	1.34
Total Real Imports								
United States	0.17	0.17	0.17	0.20	0.26	0.26	0.30	0.30
Mexico	11.48	11.56	11.65	11.47	11.43	11.49	11.42	11.59
Central America	-0.16	0.44	0.44	4.69	-0.23	2.07	4.62	5.38
Caribbean	-0.38	-0.38	-0.13	-0.40	7.91	3.44	7.90	8.28
Total	0.64	0.65	0.66	0.73	0.86	0.81	0.95	0.97

TABLE 7. Regional Structure of Exports (percent change from base)

Static Scenarios	Base Data (U.S. $ billions)	NAFTA (1a)	NAFTA + MX/CA FTA (2a)	NAFTA + MX/CA +MX/CB FTAs (3a)	NAFTA + US/CA FTA (4a)	NAFTA + US/CB FTA (5a)	NAFTA + CBI (6a)	NAFTA + US/CA + US/CB FTAs (7a)	Region-wide Integration (8a)
Total Intra-regional Exports									
United States	23.21	5.37	5.32	5.32	6.83	8.62	5.87	10.06	9.97
Mexico	17.99	5.58	6.06	6.21	5.48	5.51	5.54	5.42	6.03
Central America	1.96	-0.21	0.12	0.12	11.60	-0.50	10.07	11.31	12.58
Caribbean	3.05	-0.13	-0.13	-0.09	-0.18	18.30	15.41	18.24	18.45
Total	46.20	4.85	5.03	5.09	6.04	7.66	6.55	8.85	9.11
Total Intra-regional Exports									
United States	22.38	4.45	4.48	4.48	5.46	6.93	7.41	7.93	7.95
Mexico	17.09	7.43	7.47	7.52	7.42	7.38	7.43	7.37	7.46
Central America	2.34	-0.37	2.49	2.49	13.63	-0.53	1.05	13.46	16.29
Caribbean	4.39	-0.33	-0.33	0.16	-0.37	16.85	1.71	16.81	17.61
Total	46.20	4.85	5.03	5.09	6.04	7.66	6.55	8.85	9.11
Total Extra-Regional Exports									
United States	328.29	-0.20	-0.19	-0.19	-0.26	-0.33	-0.13	-0.39	-0.38
Mexico	10.93	0.59	-0.13	-0.30	0.72	0.62	0.64	0.75	-0.10
Central America	2.75	-0.08	0.54	0.55	-1.06	-0.02	-3.89	-1.00	-0.81
Caribbean	6.30	-0.08	-0.08	0.05	-0.08	-0.69	-3.52	-0.69	-0.51
Total	348.27	-0.17	-0.18	-0.19	-0.23	-0.30	-0.19	-0.37	-0.38
Total Extra-regional Imports									
United States	479.37	-0.08	-0.08	-0.08	-0.10	-0.13	-0.15	-0.15	-0.15
Mexico	5.90	-3.44	-3.42	-3.39	-3.44	-3.44	-3.44	-3.44	-3.39
Central America	4.10	0.06	-1.00	-1.00	-2.96	0.06	1.59	-2.96	-3.84
Caribbean	4.87	0.12	0.12	-0.13	0.12	-4.64	3.55	-4.63	-4.99
Total	494.24	-0.12	-0.13	-0.13	-0.16	-0.21	-0.14	-0.26	-0.27

Dynamic Scenarios	Base Data (U.S.$ billions)	NAFTA (1b)	NAFTA + MX/CA FTA (2b)	NAFTA + MX/CA + MX/CB FTAs (3b)	NAFTA + US/CA FTA (4b)	NAFTA + US/CB FTA (5b)	NAFTA + CBI (6b)	NAFTA + US/CA + US/CB FTAs (7b)	Region-wide Integration (8b)
Total Intra-regional Exports									
United States		10.78	10.78	10.84	12.40	14.51	11.53	16.13	16.17
Mexico		5.64	6.12	6.28	5.59	5.62	5.65	5.57	6.21
Central America		-0.06	0.43	0.43	13.26	-0.25	11.11	13.07	14.58
Caribbean		-0.13	-0.14	-0.05	-0.19	20.15	16.31	20.09	20.39
Total		7.60	7.81	7.91	8.95	10.80	9.54	12.15	12.50
Total Intra-regional Imports									
United States		4.50	4.54	4.55	5.65	7.25	7.67	8.39	8.43
Mexico		14.89	14.98	15.07	14.88	14.83	14.90	14.82	15.00
Central America		-0.51	2.60	2.60	15.48	-0.70	1.69	15.28	18.52
Caribbean		-0.69	-0.69	-0.06	-0.74	19.32	2.37	19.26	20.30
Total		7.60	7.81	7.91	8.95	10.80	9.54	12.15	12.50
Total Extra-regional Exports									
United States		-0.51	-0.50	-0.51	-0.57	-0.63	-0.42	-0.69	-0.69
Mexico		14.87	14.24	14.16	14.94	14.80	14.88	14.86	14.16
Central America		-0.33	0.73	0.73	1.56	-0.36	-3.04	1.53	2.24
Caribbean		-0.50	-0.50	-0.18	-0.50	1.88	-2.83	1.88	2.30
Total		-0.02	-0.03	-0.03	-0.06	-0.10	-0.01	-0.14	-0.15
Total Extra-regional Imports									
United States		-0.03	-0.04	-0.04	-0.05	-0.07	-0.09	-0.08	-0.08
Mexico		1.59	1.65	1.71	1.59	1.58	1.60	1.58	1.70
Central America		0.04	-0.79	-0.79	-1.47	0.04	2.30	-1.47	-2.12
Caribbean		-0.10	-0.11	-0.20	-0.10	-2.37	4.41	-2.36	-2.57
Total		-0.02	-0.02	-0.02	-0.04	-0.07	0.00	-0.10	-0.10

TABLE 8. Total Bilateral Exports (percent change from base)

Static Scenarios	NAFTA (1a)	NAFTA + MX/CA FTA (2a)	NAFTA + MX/CA + MX/CB FTAs (3a)	NAFTA + US/CA FTA (4a)	NAFTA + US/CB FTA (5a)	NAFTA + CBI (6a)	NAFTA + US/CA + US/CB FTAs (7a)	Region-wide Integration (8a)
Total exports from United States to								
Central America	-0.44	-1.43	-1.43	17.05	-0.64	1.03	16.85	15.81
Mexico	7.44	7.48	7.53	7.43	7.40	7.44	7.38	7.46
Caribbean	-0.35	-0.35	-0.50	-0.39	17.87	1.75	17.83	17.46
Rest of world	-0.20	-0.19	-0.19	-0.26	-0.33	-0.13	0.39	-0.38
Total exports from Mexico to								
Central America	-0.01	22.41	22.43	-3.24	-0.03	1.14	-3.25	18.45
United States	5.75	5.75	5.75	5.72	5.70	5.68	5.68	5.68
Caribbean	-0.08	-0.04	19.27	-0.09	-2.97	0.47	-2.98	15.69
Rest of world	0.59	-0.13	-0.30	0.72	0.62	0.64	0.75	-0.10
Total exports from Central America to								
Mexico	-1.57	3.10	3.13	-1.65	-1.57	-1.71	-1.66	3.03
United States	-0.20	0.09	0.09	12.10	-0.24	10.43	12.06	12.08
Caribbean	0.01	0.10	-0.12	-0.24	-9.30	2.37	-9.55	34.65
Rest of world	-0.08	0.54	0.55	-1.06	-0.02	-3.89	-1.00	-0.81
Total exports from Caribbean to								
Mexico	-1.65	-1.62	7.69	-1.66	-1.60	-1.64	-1.61	7.74
United States	-0.13	-0.12	-0.09	-0.17	18.38	15.47	18.34	18.44
Central America	-0.01	-1.48	-1.47	-4.01	0.00	0.89	-4.00	26.43
Rest of world	-0.08	-0.08	0.05	-0.08	-0.69	-3.52	-0.69	-0.51

Dynamic Scenarios	NAFTA (1b)	NAFTA + MX/CA FTA (2b)	NAFTA + MX/CA + MX/CB FTAs (3b)	NAFTA + US/CA FTA (4b)	NAFTA + US/CB FTA (5b)	NAFTA + CBI (6b)	NAFTA + US/CA + US/CB FTAs (7b)	Region-wide Integration (8b)
Total exports from United States to								
Central America	-0.62	-1.37	-1.37	18.84	-0.84	1.59	18.61	17.89
Mexico	14.91	14.99	15.08	14.90	14.84	14.92	14.83	15.01
Caribbean	-0.71	-0.71	-0.73	-0.76	20.30	2.37	20.25	20.07
Rest of world	-0.51	-0.50	-0.51	-0.57	-0.63	-0.42	-0.69	-0.69
Total exports from Mexico to								
Central America	0.01	22.80	22.82	-1.12	-0.01	2.18	-1.14	21.41
United States	5.81	5.81	5.81	5.79	5.79	5.76	5.77	5.77
Caribbean	-0.26	-0.23	19.32	-0.26	0.17	1.68	0.16	19.77
Rest of world	14.87	14.24	14.16	14.94	14.80	14.88	14.86	14.16
Total exports from Central America to								
Mexico	5.84	10.90	10.96	6.01	5.83	5.81	6.00	11.12
United States	-0.13	0.32	0.32	13.74	-0.16	11.38	13.70	13.91
Caribbean	-0.45	-0.35	-0.35	-0.59	-6.32	3.68	-6.47	40.05
Rest of world	-0.33	0.73	0.73	1.56	-0.36	-3.04	1.53	2.24
Total exports from Caribbean to								
Mexico	4.69	4.76	14.75	4.69	4.78	4.79	4.78	14.86
United States	-0.14	-0.14	-0.06	-0.18	20.23	16.37	20.18	20.37
Central America	-0.03	-1.23	-1.22	-2.15	0.24	1.94	-1.89	29.61
Rest of world	-0.50	-0.50	-0.18	-0.50	1.88	-2.83	1.88	2.30

TABLE 9. Real Wages and Returns to Capital and Land (percent change from base)

Static Scenarios	NAFTA (1a)	NAFTA + MX/CA FTA (2a)	NAFTA + MX/CA + MX/CB FTAs (3a)	NAFTA + US/CA FTA (4a)	NAFTA + US/CB FTA (5a)	NAFTA + CBI (6a)	NAFTA + US/CA + US/CB FTAs (7a)	Region-wide Integration (8a)
United States								
Rural Labor	0.61	0.60	0.60	0.63	0.90	0.64	0.93	0.92
Urban Unskilled Labor	0.009	0.009	-0.008	0.01	0.02	0.02	0.02	0.02
Skilled Labor	0.008	0.008	0.008	0.01	0.01	0.02	0.02	0.02
Professional	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
Land	0.20	0.19	0.19	0.15	0.29	0.19	0.24	0.24
Capital	0.01	0.01	9.87	0.01	0.02	0.02	0.02	0.02
Mexico								
Rural Labor	-3.64	-3.65	-3.66	-3.61	-3.51	-3.62	-3.48	-3.49
Urban Unskilled Labor	1.02	1.02	1.02	1.02	1.01	1.02	1.00	1.00
Skilled Labor	1.05	1.06	1.06	1.05	1.04	1.05	1.04	1.05
Professional	1.07	1.07	1.06	1.06	1.05	1.06	1.05	1.05
Land	-6.97	-6.98	-6.99	-6.93	-6.79	-6.94	-6.75	-6.78
Capital	1.17	1.18	1.20	1.16	1.15	1.17	1.14	1.17
Central America								
Rural Labor	0.23	1.17	1.16	3.12	0.31	-0.06	3.19	4.21
Urban Unskilled Labor	-0.03	0.29	0.29	2.04	-0.07	0.79	2.01	2.40
Skilled Labor	-0.03	0.29	0.29	2.04	-0.07	0.79	2.01	2.40
Professional	-0.03	0.29	0.29	2.04	-0.07	0.79	2.01	2.40
Land	0.01	0.76	0.76	3.44	0.02	0.53	3.45	4.24
Capital	-0.03	0.30	0.30	2.14	-0.06	0.73	2.12	2.51
Caribbean								
Rural Labor	0.13	0.13	0.20	0.14	-0.53	-1.24	-0.53	-0.79
Urban Unskilled Labor	-0.15	-0.15	0.02	-0.17	7.25	2.32	7.23	7.60
Skilled Labor	-0.12	-0.13	0.05	-0.14	6.52	1.72	6.51	6.83
Professional	-0.12	-0.12	0.05	-0.13	5.48	1.31	5.46	5.78
Land	0.49	0.48	0.54	0.53	-1.61	-0.79	-1.57	-1.77
Capital	-0.08	-0.08	0.13	-0.09	6.19	1.25	6.18	6.54

Dynamic Scenarios	NAFTA (1b)	NAFTA + MX/CA FTA (2b)	NAFTA + MX/CA + MX/CB FTAs (3b)	NAFTA + US/CA FTA (4b)	NAFTA + US/CB FTA (5b)	NAFTA + CBI (6b)	NAFTA + US/CA + US/CB FTAs (7b)	Region-wide Integration (8b)
United States								
Rural Labor	0.94	0.93	0.93	0.98	1.32	1.02	1.36	1.35
Urban Unskilled Labor	0.03	0.02	0.02	0.03	0.05	0.04	0.06	0.06
Skilled Labor	0.03	0.03	0.03	0.04	0.05	0.05	0.06	0.06
Professional	0.03	0.03	0.03	0.04	0.06	0.05	0.06	0.06
Land	0.44	0.43	0.43	0.39	0.59	0.46	0.54	0.53
Capital	0.09	0.09	0.09	0.11	0.15	0.14	0.17	0.17
Mexico								
Rural Labor	1.91	1.95	1.99	1.93	1.99	1.93	2.01	2.10
Urban Unskilled Labor	5.06	5.09	5.12	5.06	5.03	5.06	5.02	5.08
Skilled Labor	5.11	5.15	5.18	5.11	5.08	5.11	5.07	5.14
Professional	5.12	5.15	5.18	5.12	5.09	5.12	5.08	5.14
Land	-2.94	-2.92	-2.89	-2.92	-2.80	-2.91	-2.78	-2.72
Capital	7.25	7.31	7.37	7.24	7.20	7.26	7.19	7.32
Central America								
Rural Labor	0.08	1.58	1.58	7.70	0.13	2.28	7.74	9.48
Urban Unskilled Labor	-0.14	0.43	0.42	4.15	-0.18	2.00	4.10	4.76
Skilled Labor	-0.14	0.43	0.42	4.15	-0.18	2.00	4.10	4.76
Professional	-0.14	0.43	0.42	4.15	-0.18	2.00	4.10	4.76
Land	-0.20	1.14	1.13	8.28	-0.24	2.96	8.24	9.79
Capital	-0.23	0.57	0.56	5.93	-0.29	2.66	5.86	6.81
Caribbean								
Rural Labor	-0.27	-0.27	-0.01	-0.27	2.56	0.10	2.55	2.52
Urban Unskilled Labor	-0.45	-0.45	-0.13	-0.47	10.03	3.41	10.01	10.61
Skilled Labor	-0.41	-0.42	-0.08	-0.43	9.24	2.80	9.22	9.79
Professional	-0.41	-0.41	-0.08	-0.42	8.05	2.31	8.03	8.58
Land	0.14	0.13	0.41	0.18	1.78	0.73	1.80	1.88
Capital	-0.69	-0.70	-0.27	-0.71	10.60	2.88	10.59	11.30

TABLE 10. Aggregate Rural and Urban Migration (thousands)

Static Scenarios	NAFTA (1a)	NAFTA + MX/CA FTA (2a)	NAFTA + MX/CA + MX/CB FTAs (3a)	NAFTA + US/CA FTA (4a)	NAFTA + US/CB FTA (5a)	NAFTA + CBI (6a)	NAFTA + US/CA + US/CB FTAs (7a)	Region-wide integration (8a)
Rural Labor								
United States	12	12	12	11	14	8	13	13
Mexico	-275	-275	-275	-279	-271	-294	-276	-275
Central America	275	34	33	73	26	64	72	87
Caribbean	25	24	24	22	-38	54	-41	-54
Urban Labor								
United States	198	197	196	155	167	53	125	122
Mexico	-11	-10	-10	-19	-16	-37	-24	-23
Central America	13	7	6	28	11	57	26	24
Caribbean	12	12	13	10	106	96	104	106

Dynamic Scenarios	NAFTA (1b)	NAFTA + MX/CA FTA (2b)	NAFTA + MX/CA + MX/CB FTAs (3b)	NAFTA + US/CA FTA (4b)	NAFTA + US/CB FTA (5b)	NAFTA + CBI (6b)	NAFTA + US/CA + US/CB FTAs (7b)	Region-wide integration (8b)
Rural Labor								
United States	-1	-2	-2	-5	-0.91	-7	-4	-5
Mexico	111	112	115	93	97	75	79	82
Central America	-28	-8	-9	111	-36	52	103	133
Caribbean	-30	-31	-28	-38	-11	37	-21	-31
Urban Labor								
United States	-351	-364	-372	-455	-452	-555	-555	-581
Mexico	337	337	338	315	314	295	292	292
Central America	-18	-23	-23	5	-24	25	-0.98	-1
Caribbean	-20	-21	-18	-26	113	77	107	111

We thus have a classic prisoner's dilemma problem in that it is optimal for each region to defect from a coalition strategy, a conflict which could result in neither region achieving either its first- or second-best outcome.

From the point of view of the United States, however, CBI is not as desirable as hub-and-spoke FTAs. FTAs generate significantly more bilateral U.S. exports and relatively fewer imports than does CBI (Table 8). CBI, meanwhile, generates more U.S. imports than exports (Table 7). Declines in output and sectoral import penetration into the United States are much sharper in sensitive sectors such as fruits and vegetables and light manufacturing under CBI than under NAFTA or under bilateral FTAs. Interestingly enough, some U.S. real wages rise slightly more with CBI than with bilateral FTAs as import prices of wage goods fall (Table 9).

Scenarios 3 and 7 alternatively place Mexico or the United States at the hub of a set of spokes with Central America or the Caribbean. The hub-and-spoke results identify a series of conflicting interests. First, the dynamic results in Table 6 suggest that the preferred outcome for both the United States and Mexico is to be the sole hub of a regional trading system. Yet, it is also the worst outcome for either the United States or Mexico to be just a spoke in a new regional trading system. This conflict sets the stage for potentially damaging competition. Second, Central America, the Caribbean, and Mexico would each prefer exclusive access to the U.S. market. This creates further potential for competition among countries. Third, while either Mexico or the United States would prefer to be the sole hub of a new trading system, none of the possible hub-and-spoke arrangements maximizes GDP for the region as a whole. Such a maximum can only be achieved through full region-wide integration, which is, how ever, a second-best outcome for the United States and Mexico.

A Greater North American Free Trade Agreement

Scenario 8 simulates the accession to NAFTA of both Central America and the Caribbean. While Scenario 8 provides the best outcome in terms of total real GDP and total exports for the region, it is not the best outcome for all countries (Table 6). There is a split between the smaller and poorer countries, on the one hand, for whom dynamic Scenario 8b is by far the superior outcome, and the larger and richer countries (Mexico and the United States), on the other hand, for whom the preferred option is to be the central hub of a new regional trading system (Scenario 3b and 7b, respectively).

For Central America and the Caribbean, Scenario 8b represents an increase in real GDP of 2.8% and 3.3%, respectively, with intra-regional exports increasing by 13.6% and 18.5%, respectively. These region-wide integration results are 10%-20% better than the best alternative, which is an exclusive FTA with the United States (Scenarios 4b and 5b). Scenario 8b not only eliminates the negative potential impacts of NAFTA but is clearly superior to both the CBI or a Mexico bilateral FTA. The Caribbean does particularly well under Scenario 8, which raises its exports to Mexico, Central America, and the United States (Table 8). Scenario 8 also generates real income gains for virtually all factors of production in Central America and the Caribbean (Table 9). Production levels are highest for most sectors except for corn and consumer durables, which do better under protection and the CBI. Consumer durables producers and some agricultural sectors in the Caribbean would suffer output and export losses even as sectors such as light manufacturing and food processing enjoy more significant output and export growth.

For the United States and Mexico, on the other hand, Scenario 8 is slightly inferior to spoke scenarios in which each country is the central hub. The competition between Mexico and the United States revolves around the fact that each would prefer to have Central America and the Caribbean as its own captive export market. Yet, expanding NAFTA is unambiguously better for both the United States and Mexico. In both scenarios 7b and 8b, United States real GDP and exports grow at roughly double the rate of NAFTA as a whole.

Scenario 8 also generates first-best outcomes for virtually all factors of production in the United States and Mexico. There are, however, some distributional issues which are specific to some U.S. sectors and industry/occupation groupings. Some U.S. fruit and vegetable growers, food processors, and light manufacturing producers would face increased competition, even though exports in these sectors would also increase in Scenario 8 relative to NAFTA.

The rest of the world clearly suffers more trade diversion under Scenario 8, even though total North American trade creation is much higher than under NAFTA (Table 7). Yet, it is important to point out that trade diversion with the rest of the world actually decreases when the dynamic gains from integration are compared to the comparative static results.

The dynamic scenarios differ in important respects from the comparative static versions. The dynamic version makes the option of participating in broader regional integration more attractive for Mexico and Central America than the static formulation. For Mexico, the most advantageous static outcome is NAFTA by itself, where no other countries are allowed to participate (Scenario 1a in Table 6). Mexican output and GDP are reduced in all other scenarios because they involve sharing the U.S. or Mexican market with another country. In the dynamic version of the scenarios, on the other hand, the most advantageous scenario for Mexico is to be the hub of a regional set of FTA spokes (Scenario 3b of Table 6). The accession of other countries to NAFTA is no longer the worst option but rather becomes the second-best alternative, one which is more advantageous for Mexico than NAFTA itself. For Central America, the most advantageous static option is an exclusive FTA with the United States (Scenario 4a). The dynamic version, on the other hand, makes region-wide integration (Scenario 8b) the most desirable alternative.

The results indicate that only under the comparative static scenarios does it make sense for Mexico to oppose expansion of NAFTA. In the dynamic formulation, Mexico as well as other countries would benefit from regional trade liberalization beyond NAFTA. While Mexico has less to gain than the United States from either expanding NAFTA or developing more regional FTAs, Mexico has nevertheless been more aggressive in pursuing both.

CONCLUSION

At first glance, our results suggest little reason for the United States to pursue further regional integration, but substantial reasons for other countries in the region to do so. Any likely outcome should have relatively small but positive implications for the United States, and more important positive or negative implications for its neighbors. While the overall effect of every scenario is small for the United States, there are relatively important differences among scenarios, both for the United States and for the rest of the region. U.S. actions or inactions have regional consequences.

Our modeling results suggest that: (1) new FTAs are only slightly superior to NAFTA accession but not superior for the region as a whole; (2) the United States is better off through the incorporation of wider regional groupings rather than a smaller number of individual countries; and (3) trade diversion with respect to the rest of the world is a real issue which will grow in importance as more countries join the NAFTA but which can be ameliorated by the dynamic gains from regional integration.

A U.S.-centered hub-and-spoke system or expansion of NAFTA to both Central America and the Caribbean, our Greater North American Free Trade Agreement scenario, are close first- and second-best outcomes for the United States. U.S. real GDP and exports expand at roughly double their rate of improvement under NAFTA alone. This is because the U.S. exports to a wider NAFTA market and in part to a richer market due to freer trade among all countries. Hub-and-spoke systems or a Greater North American Free Trade Agreement provide close first- and second-best outcomes for *all* factors in the United States. This is due to both a fall in the import prices of wage goods and a shifting of production to more productive export activities.

Our hub-and-spoke scenarios uncover a zero-sum game between Central America and the Caribbean as each attempts to reach its most favorable outcome, a conflict that can only be resolved through creation of a Greater North American Free Trade Area, which represents a second-best outcome for Mexico and the United States. Also present is the incentive for Mexico and the United States to each be the center of its own hub-and-spoke system and to prevent Central America and the Caribbean from becoming spokes for the other. The scenario results indicate that it is in the interests of both Central America and the Caribbean to compete against one another to establish their own exclusive free trade agreement with the United States at the hub.

CBI-Parity, which is often argued as most beneficial to both Central America and the Caribbean, and thus capable of resolving their potential conflict, is actually second-best compared to individualized FTAs with the United States. This pits each region against the other, as each has an incentive to defect from a coalition in order to obtain the benefits of unilateral FTA access. The CBI-Parity scenario is further jeopardized by the fact that it is not a preferential outcome for the United States, which would be better off with bilateral or multilateral free trade agreements. The Greater North American Free Trade Agreement thus appears as the first-best outcome for both Central America and the Caribbean. For the United States and Mexico, this scenario remains inferior to their own hub-and-spoke systems.

NOTES

1. For example, two of the 29 mega-deals (foreign direct investment transactions with a value of $100 million or more) registered by the Department of Commerce in 1992 were conducted by Mexican investors.

2. The term "Caribbean Basin" refers to the 22 nations that participate in the U.S. Government's Caribbean Basin Initiative preferential trade program (Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, British Virgin Islands, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Montserrat, Netherlands Antilles, Nicaragua, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago), as well as Suriname.

3. This is based on the value of imports under item 9802.00.80 of the Harmonized Tariff Classification System (formerly item 807), which allows for duty-free exportation and reimportation of U.S. goods which receive processing in Mexico or CBERA countries. Duty is assessed only on the value added in those countries.

4. Our model starts from the WALRAS model developed at the OECD to analyze the impact of the current GATT negotiations on the major OECD countries (OECD 1989-1990) and the RUNS model described in Goldin, Knudsen, and van der Mensbrugghe (1993).

5. Earlier versions were developed in Hinojosa-Ojeda and Robinson (1991) and Robinson, Burfisher, Hinojosa-Ojeda, and Thierfelder (1993).

6. Social Accounting Matrices are described in Pyatt and Round (1985).

7. Robinson (1989) surveys CGE models applied to developing countries. Shoven and Whalley (1984) survey models of developed countries. The theoretical properties of this family of trade-focused CGE models are discussed in Devarajan, Lewis, and Robinson (1990). A full presentation of the GNAFTA CGE model is available from the authors.

8. These distortion parameters range from about 0.5 to 2.5 in the United States and from about 0.5 to 5.0 in Mexico, Central America, and the Caribbean. Outside the United States, for some labor categories in some sectors, the values are even higher, but the numbers of workers involved are very small.

9. De Melo and Robinson (1989) and Devarajan, Lewis, and Robinson (1991) discuss the role of the exchange rate in this class of model.

10. The FTA-CGE model embodies some of the features considered by Katz and Summers (1988) and Dickens and Lang (1988) in their discussions of the role of trade policy when factor markets are distorted.

11. Armington (1969) used the specification in deriving import-demand functions; the import aggregation functions are sometimes called "Armington functions." Devarajan, Lewis, and Robinson (1990) discuss in detail the properties of single-country models which incorporate imperfect substitution. Brown (1987) analyzes the implications of using CES import aggregation functions in multicountry trade models. Others have criticized the use of the CES function on econometric grounds (see, e.g., Alston et al. 1989).

12. Hanson, Robinson, and Tokarick (1990) use the AIDS function in their 30-sector single-country CGE model of the United States. They estimate the sectoral import demand functions using time-series data and find that sectoral expenditure elasticities of import demand are generally much greater than one in the United States, results consistent with estimates from macroeconometric models (see also Green and Alston 1990).

13. This result provides confirmation of the theoretical proposition that the dynamic effects of regional integration may outweigh their trade diversion impacts (see Chichilnisky 1992; Gunter and Meldrum 1993).

14. The sectoral results are shown in the tables in Appendix 4 of Hinojosa-Ojeda, Lewis, and Robinson (1994).

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