Regionalism versus Globalization in the Americas: Empirical Evidence on Opportunities and Challenges

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ABSTRACT

Trade liberalization across the Americas holds the potential to substantially improve living standards and present a successful model of North-South regionalism. In this paper, we use a global CGE model to assess the effects of such an arrangement for both member and non-member economies. We also evaluate a number of other issues, including incentive compatibility of the regional agreement for individual members and its structural compatibility with the larger agenda of global trade liberalization. Our results support the notion that regionalism in the Americas is beneficial to member economies, but we note important ways in which it may diverge from the path to global free trade. Generally speaking, our results reveal the complexity of adjustments and indirect effects arising from large trade initiatives of this kind. This serves to remind policy makers of the advantage of detailed empirical analysis over simplified theory, general rules of thumb, or intuition alone.

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1. Introduction

Two decades of regional initiatives have changed the landscape of trade relations in the Americas. During this period, the region has evolved from an eclectic mosaic of inward, outward, and post-colonial policy regimes toward a more harmonious blend of negotiated strategies, giving rise to free trade agreements that set new standards for North-South and South-South regionalism. With the realization of the NAFTA and MERCOSUR, economies of the Americas are seeing new patterns of specialization emerge from more open multilateralism, and this experience is inspiring ambitious plans to extend free trade across two continents.

In this paper, we use a global CGE model to evaluate several aspects of more liberal trade across the Americas. In the first instance, we assess the consequences for individual country trade and real GDP growth when intra-regional import tariffs are abolished in a Free Trade Across the Americas Agreement (FTAA). As expected, our results indicate significant long term aggregate gains for member countries, but more dramatic (in percentage terms) structural adjustments ensuing at the sectoral level. We also note trade diversion away from extra-regional partners equal to about half the total growth in intra-regional trade.

Taking the regional perspective as our starting point, we then compare it with two other reference cases, globalization and unilateralism. Considered as worldwide tariff abolition, we find that global trade liberalization (GTL) would increase overall trade more that ten times as much as the FTAA, and trade growth for the regional economies would be about five times greater. In terms of aggregate real GDP, the regional economies would experience about double the benefit of FTAA under GTL. From this we infer that the main impetus toward regionalism is its relative certainty and expedience by comparison to WTO-based GTL. In other words, the risk-adjusted present value of the FTAA is higher for regional members. To the extent that and FTAA and GTL are not

mutually exclusive, one might also advocate "intermediate regionalism" for the precedence, institution building and standard setting it confers on member countries.[1]

A long debate has been carried in the trade literature about the incentive compatibility of regional agreements, and we examine also this issue below in the context of the Americas. The basic argument is that, for prospective members of a regional trade liberalization (RTL) agreement, unilateral trade liberalization (UTL) usually dominates the RTL and thus the agreement must be designed to include special incentives. This assertion has been supported with highly simplified theoretical models (3 countries, 2-3 goods), that take no account of terms-of-trade effects or more complex patterns of adjustment. Our CGE model captures just such effects, and does so in a much more disaggregated framework. Furthermore, our results indicate that the RTL incentive problem is empirically vacuous. In no case that we examine for the Americas does unilateralism even approach the benefits of multilateral liberalization, either at the regional or global level. Thus we conclude that the FTAA agenda should be sustainable on basic voluntary principles of market openness.

Whether or not the global or unilateral regimes are in fact compatible with regionalism is another matter, however, and we also examine this issue in the present paper. More precisely, comparing aggregate national gains from GTL, RTL, and UTL reveals nothing about the detailed structural adjustments ensuing from these policy regimes. These adjustments are of paramount interest to policy makers, however, since they will exert a strong influence on political evolution, and it is precisely such detailed structural effects, that CGE models are designed to elucidate. For this reason, we compare the three types of trade regime in terms of a concept we call structural congruence (defined precisely below), reflecting the similarity in patterns of real output adjustment ensuing from different policies.

Our empirical results indicate that, for the majority of member countries, FTAA type regionalism differs sharply from GTL and UTL in terms of both trade and sectoral output adjustment, and in many cases we see significant reversals. This implies two

[1] These fringe benefits are espoused by a variety of authors, and the general issues are synthesized nicely in World Bank (2000). Compare also Hoekman adn Leidy (1993) and Lawrence (1996).

important things for policy makers. 1) There is no first-mover advantage for countries in the regional context, meaning they will likely face additional adjustment costs it they liberalize "ahead" of the regional agenda. 2) There are important ways in which an FTAA agenda is structurally inconsistent with broader globalization. This portends nontrivial adjustment costs and political economy considerations that can be expected impede progress from RTL to GTL.

The path to regionalism in the Americas has been laid out, largely paved with agreements in fact or in principle and, in many places, is already well-trodden. Whether or not it points toward or diverges from the path to globalization, it is already conferring gains on its members and can be expected to do more of this with regional extension and deepening. It is clear from our results, however, that more attention to the structural details of liberalization, adjustment, and growth will be needed to realize the full potential of regional trade and to facilitate an eventual transition to more liberal global trade. Empirical simulation models of the kind presented here can support this evolving policy in essential ways, identifying both the opportunities and challenges that lie ahead for more open multilateralism.

In the next section, we give a brief overview of the global CGE model. This is followed in section 3 by discussion of the baseline data and forward scenario to which the model was calibrated. Section 4 presents the basic results of the paper, followed by concluding remarks in Section 5.

2. Model Summary

This paper uses a version of the LINKAGE Model, a global, multi-region, multi-sector, dynamic applied general equilibrium model.[2] The base data set—GTAP[3] Version 5.0—is defined across 66 country/region groupings, and 57 economic sectors. For this paper, the model has been defined for an aggregation of 16 country/regions and 18

[2] The LINKAGE model is directly inspired by RUNS Model (see Burniaux and van der Mensbrugghe, 1994), and the OECD GREEN Model (see van der Mensbrugghe, 1994). Full model specification is available from the authors.

[3] GTAP refers to the Global Trade Analysis Project based at Purdue University. For more information see Hertel, 1997.

sectors including sectors of importance to the poorer developing countries—grains, textiles, and apparel. The regional and sectoral concordances can be found in Tables 2.1 and 2.2. The remainder of this section outlines briefly the main characteristics of supply, demand, and the policy instruments of the model.

2.1. Production

All sectors are assumed to operate under constant returns to scale and perfect competition. Production in each sector is modeled by a series of nested CES production functions which are intended to represent the different substitution and complementarity relations across the various inputs in each sector. There are material inputs which generate the input/output table, as well as factor inputs representing value added.

Three different production archetypes are defined in the model—crops, livestock, and all other goods and services. The CES nests of the three archetypes are graphically depicted in Figures A-1 through A-3. Within each production archetype, sectors will be differentiated by different input combinations (share parameters) and different substitution elasticities. The former are largely determined by base year data, and the latter are given values by the modeler.

The key feature of the crop production structure is the substitution between intensive cropping versus extensive cropping, i.e. between fertilizer and land (see Figure A-1).[4] Livestock production captures the important role played by feed versus land, i.e. between ranch- versus range-fed production (see Figure A-2).[5] Production in the other sectors more closely matches the traditional role of capital/labor substitution, with energy introduced as an additional factor of production (see Figure A-3).

In each period, the supply of **primary** factors—capital, labor, and land—is usually predetermined. However, the supply of land is assumed to be sensitive to the contemporaneous price of land. Land is assumed to be partially mobile across agricultural

[4] In the original GTAP data set, the fertilizer sector is identified with the crp sector, i.e. chemicals, rubber, and plastics.

[5] Feed is represented by three agricultural commodities in the base data set: wheat, other grains, and oil seeds.

sectors. Given the comparative static nature of the simulations which assumes a longer term horizon, both labor and capital are assumed to be perfectly mobile across sectors (though not internationally).[6]

Model current specification has an innovation in the treatment of labor resources.[7] The GTAP data set identifies two types of labor skills—skilled and unskilled. Under the standard specification, both types of labor are combined together in a CES bundle to form aggregate sectoral labor demand, i.e. the two types of labor skills are directly substitutable. In the new specification, a new factor of production has been inserted which we call *human* capital. It is combined with capital to form a physical *cum* human capital bundle, with an assumption that they are complements. On input, the user can specify what percentage of the skilled labor factor to allocate to the human capital factor.

Once the optimal combination of inputs is determined, sectoral output prices are calculated assuming competitive supply (zero-profit) conditions in all markets.

2.2. Consumption and closure rules

All income generated by economic activity is assumed to be distributed to a single representative household. The single consumer allocates optimally his/her disposable income among the consumer goods and saving. The consumption/saving decision is completely static: saving is treated as a "good" and its amount is determined simultaneously with the demands for the other goods, the price of saving being set arbitrarily equal to the average price of consumer goods.[8]

Government collects income taxes, indirect taxes on intermediate and final consumption, taxes on production, tariffs, and export taxes/subsidies. Aggregate

[6] This can be contrasted with, e.g. Fullerton (1983).

[7] This feature is not invoked in results reported here. Because of increased interest in labor markets and human capital in the Latin American context (see e.g. World Bank (2001)), we have developed this modeling capacity and are using it experimentally. For indications about modeling in this context, see Collado et al (1995), Maechler and Roland-Holst (1997), and van der Mensbrugghe (1998).

[8] The demand system used in LINKAGE is a version of the Extended Linear Expenditure System (ELES) which was first developed by Lluch (1973). The formulation of the ELES used in LINKAGE is based on atemporal maximization—see Howe (1975). In this formulation, the marginal propensity to save out of supernumerary income is constant and independent of the rate of reproduction of capital.

government expenditures are linked to changes in real GDP. The real government deficit is exogenous. Closure therefore implies that some fiscal instrument is endogenous in order to achieve a given government deficit. The standard fiscal closure rule is that the marginal income tax rate adjusts to maintain a given government fiscal stance. For example, a reduction or elimination of tariff rates is compensated by an increase in household direct taxation, *ceteris paribus*.

Each region runs a current-account surplus (deficit) that is fixed (in terms of the model numéraire). The counterpart of these imbalances is a net outflow (inflow) of capital, subtracted from (added to) the domestic flow of saving. In each period, the model equates gross investment to net saving (equal to the sum of saving by households, the net budget position of the government and foreign capital inflows). This particular closure rule implies that investment is driven by saving. The fixed trade balance implies an endogenous real exchange rate. For example, removal of tariffs which induces increased demand for imports is compensated by increasing exports which is achieved through a real depreciation.

2.3. Foreign Trade

The world trade block is based on a set of regional bilateral flows. The basic assumption in LINKAGE is that imports originating in different regions are imperfect substitutes (see Figure A-4). Therefore in each region, total import demand for each good is allocated across trading partners according to the relationship between their export prices. This specification of imports—commonly referred to as the Armington[9] specification—implies that each region faces a downward-sloping demand curve for its exports. The Armington specification is implemented using two CES nests. At the top nest, domestic agents choose the optimal combination of the domestic good and an aggregate import good consistent with the agent's preference function. At the second

[9] See Armington, 1969 and compare, e.g. de Melo and Robinson (1989) and Rutherford and Tarr (2001).

nest, agents optimally allocate demand for the aggregate import good across the range of trading partners.[10]

The bilateral supply of exports is specified in parallel fashion using a nesting of constant-elasticity-of-transformation (CET) functions. At the top level, domestic suppliers optimally allocate aggregate supply across the domestic market and the aggregate export market. At the second level, aggregate export supply is optimally allocated across each trading region as a function of relative prices.[11]

Trade variables are fully bilateral and include both export and import taxes/subsidies. Trade and transport margins are also included, therefore world prices reflect the difference between FOB and CIF pricing.

2.4. Prices

The LINKAGE model is fully homogeneous in prices, i.e. only relative prices are identified in the equilibrium solution. The price of a single good, or of a basket of goods, is arbitrarily chosen as the anchor to the price system. The price (index) of OECD manufacturing exports has been chosen as the numéraire, and is set to 1.

2.5. Elasticities

Production elasticities are relatively standard and are available from the authors. Aggregate labor and capital supplies are fixed, and within each economy they are perfectly mobile across sectors.

[10] The GTAP data set allows each agent of the economy to be an Armington agent, i.e. each column of demand in the input/output matrix is disaggregated by domestic and import demand. (The allocation of imports across regions can only be done at the national level). For the sake of space and computing time, the standard model specification adds up Armington demand across domestic agents and the Armington decomposition between domestic and aggregate import demand is done at the national level, not at the individual agent level.

[11] A theoretical analysis of this trade specification can be found in de Melo and Robinson, 1989.

3. Baseline Data and Scenario

As has already been mentioned the model is calibrated to a 1997 reference global database obtained from GTAP Version 5. While these data are generally available to the research community, we reproduce some of this information in the present section for the convenience of the reader. For example, to give a general indication about trade patterns in the base data, Tables 3.1 and 3.2 summarize 1997 trade flows for selected regions included in the model.

Table 3.1: Summary of export flows in 1997
(*percent*)

	Latin America and the Caribbean excluding Mexico					Canada, Mexico and the United States				
	Share	*LAX*	*NFT*	*OHY*	*ROW*	*Share*	*LAX*	*NFT*	*OHY*	*ROW*
Wheat	0.8	55.6	0.0	1.1	43.3	0.7	12.3	8.5	21.8	57.4
Other grains	1.1	40.7	2.4	16.7	40.2	0.7	11.6	17.3	46.3	24.8
Oil seeds	1.4	12.4	6.2	66.0	15.4	0.8	6.1	17.8	55.1	21.1
Sugar	1.8	11.3	20.9	12.5	55.4	0.0	16.7	43.3	10.1	29.9
Other crops	8.4	9.3	32.1	51.6	7.0	1.3	6.0	36.0	37.0	20.9
Livestock	0.4	26.7	21.5	44.4	7.5	0.4	2.2	50.3	25.0	22.5
Energy	14.6	27.9	53.1	12.0	7.1	3.7	6.0	66.9	17.3	9.9
Processed foods	11.9	22.1	16.4	38.3	23.3	3.4	7.0	32.6	39.6	20.9
Textile	2.3	35.0	45.2	15.5	4.4	1.4	14.0	53.5	20.7	11.8
Wearing apparel	3.3	7.3	85.7	5.8	1.2	1.0	22.2	58.2	15.9	3.7
Leather goods	2.1	14.9	48.1	27.5	9.5	0.3	9.5	41.2	29.6	19.6
Basic manufacturing	20.8	33.9	24.5	30.7	10.9	20.5	7.7	49.4	30.6	12.4
Motor vehicles	3.7	69.9	14.6	10.1	5.4	9.5	4.0	81.1	11.4	3.4
Other transportation equipment	1.2	14.8	15.3	46.8	23.1	4.3	4.5	15.9	50.4	29.2
Electronic equipment	0.9	37.3	44.0	13.1	5.6	11.6	6.8	35.4	40.1	17.8
Other manufacturing	9.6	32.2	22.6	32.7	12.6	19.6	7.3	43.3	34.4	15.1
Construction	0.1	0.0	14.2	55.3	30.5	0.3	0.9	0.1	77.8	21.2
Services	15.6	3.3	20.7	54.4	21.5	20.4	4.3	6.7	62.3	26.7
Total	**100.0**	**23.9**	**29.5**	**32.4**	**14.1**	**100.0**	**6.4**	**38.6**	**37.9**	**17.1**

Notes: 1. The first column represents the sectoral share in aggregate exports. The following four columns provide the sectoral destination shares.
2. The regional acronyms are Latin America and the Caribbean excluding Mexico (LAX), Canada, Mexico and the United States (NFT), Western Europe, Japan and other high-income countries (OHY), and rest of the world (ROW).
Source: GTAP Version 5.0.

Table 3.2: Summary of import flows in 1997
(percent)

	Latin America and the Caribbean excluding Mexico					Canada, Mexico and the United States				
	Share	*LAX*	*NFT*	*OHY*	*ROW*	*Share*	*LAX*	*NFT*	*OHY*	*ROW*
Wheat	0.8	44.1	48.5	7.4	0.0	0.1	0.0	98.1	0.0	1.9
Other grains	0.8	46.2	46.6	1.0	6.1	0.1	2.9	74.3	3.6	19.2
Oil seeds	0.4	39.6	60.4	0.0	0.0	0.1	9.4	84.6	4.0	1.9
Sugar	0.2	87.1	10.1	2.8	0.0	0.1	56.4	9.1	17.7	16.8
Other crops	1.4	47.7	27.2	6.8	18.3	1.1	37.3	37.0	6.7	19.0
Livestock	0.2	49.4	28.1	17.7	4.8	0.3	4.4	71.5	15.1	9.0
Energy	7.2	46.7	14.8	10.3	28.2	6.4	19.3	36.0	10.4	34.3
Processed foods	4.8	45.9	24.0	27.5	2.7	2.7	11.4	37.4	35.0	16.2
Textile	3.0	22.5	32.1	15.4	30.0	2.1	7.8	33.0	26.2	33.0
Wearing apparel	1.9	10.6	57.2	6.4	25.8	3.1	14.6	17.5	18.8	49.1
Leather goods	0.9	29.4	14.2	11.5	44.9	1.7	9.5	6.1	17.5	66.9
Basic manufacturing	22.0	26.5	34.6	30.8	8.1	18.9	4.3	49.3	33.3	13.2
Motor vehicles	7.8	27.6	23.8	41.3	7.4	11.9	0.7	59.7	37.5	2.0
Other transportation equipment	5.4	2.7	17.2	65.2	14.8	1.8	1.6	34.8	56.9	6.8
Electronic equipment	7.1	3.7	53.2	28.2	14.9	14.5	0.4	26.2	45.5	28.0
Other manufacturing	19.7	13.0	35.0	43.5	8.5	19.8	1.7	39.5	42.4	16.3
Construction	0.1	0.0	10.6	69.1	20.3	0.1	1.6	0.4	68.1	29.9
Services	16.4	2.6	25.7	51.8	19.9	15.1	3.4	8.4	64.2	24.1
Total	**100.0**	**19.8**	**31.1**	**35.6**	**13.4**	**100.0**	**4.7**	**35.5**	**39.7**	**20.1**

Notes: 1. The first column represents the sectoral share in aggregate imports. The following four columns provide the sectoral shares by region of origin.
2. The regional acronyms are Latin America and the Caribbean excluding Mexico (LAX), Canada, Mexico and the United States (NFT), Western Europe, Japan and other high-income countries (OHY), and rest of the world (ROW).
Source: GTAP Version 5.0.

Second only to trade flows in their importance for determining the policy outcomes we consider in this paper are prior patterns of import protection. The next three tables present this information in different ways to elucidate a variety of perspectives on trade price distortions. For selected regions, Tables 3.3 and 3.4 give import protection levels by origin and destination, respectively. This helps reveal asymmetries in market openness for the aggregate commodity groups in the current database. Table 3.5, on the other hand, gives a matrix of trade weighted import barriers by country and region, indicating (fairly significant) asymmetries in overall domestic market access under current (1997) patterns of trade. Table 3.6 summarizes the country and regional abbreviations used in tables throughout the paper.

It is essential to note, even in passing, that we are not modeling significant agricultural protection in the present exercise. This means our results will generally understate the effects of trade liberalization at the aggregate level and do not fully capture sectoral adjustments, particularly in primary activities. This will be the subject of further research.[12]

Table 3.3: Applied tariffs by region of origin
(*percent*)

	Latin America and the Caribbean excluding Mexico					Canada, Mexico and the United States				
	LAX	*NFT*	*OHY*	*ROW*	*Total*	*LAX*	*NFT*	*OHY*	*ROW*	*Total*
Wheat	6.6	8.3	0.0	..	7.0	..	32.1	..	0.0	31.5
Other grains	12.4	13.9	0.0	14.9	13.2	0.0	20.2	0.0	2.9	15.5
Oil seeds	4.1	6.2	..	..	5.4	8.6	4.4	0.0	0.0	4.6
Sugar	13.3	12.3	0.0	..	12.8	46.4	45.0	24.1	51.5	43.1
Other crops	9.2	9.7	7.3	5.4	8.5	13.3	7.4	11.7	15.5	11.5
Livestock	0.0	7.6	0.0	0.0	2.1	0.0	4.1	0.0	0.0	2.9
Energy	6.4	5.0	2.6	4.3	5.2	0.9	0.0	0.7	0.5	0.4
Processed foods	15.5	16.0	17.8	12.2	16.2	12.1	17.4	15.0	11.7	15.0
Textile	14.4	17.3	13.3	13.5	14.9	14.4	0.0	11.3	11.3	7.9
Wearing apparel	17.1	24.9	13.4	14.2	20.5	13.9	0.0	14.1	13.7	11.5
Leather goods	13.6	14.6	8.1	17.0	14.8	8.8	0.0	9.4	15.3	12.8
Basic manufacturing	10.7	9.8	10.2	9.0	10.1	3.0	0.0	3.8	3.6	1.9
Motor vehicles	32.6	22.2	22.6	26.7	25.6	2.9	0.0	3.0	2.1	1.2
Other transportation equipment	11.0	3.7	12.7	9.5	10.6	1.7	0.0	1.5	3.1	1.1
Electronic equipment	9.8	10.5	10.7	12.4	10.8	3.4	0.0	1.4	1.5	1.1
Other manufacturing	12.0	11.5	12.4	14.6	12.2	2.8	0.0	2.8	2.5	1.7
Construction	..	0.0	3.9	0.0	2.7	0.0	0.0	0.0	0.0	0.0
Services	0.0	1.1	0.9	0.8	0.9	0.0	0.0	0.0	0.0	0.0
Total	**12.8**	**10.5**	**10.1**	**8.8**	**10.6**	**5.9**	**0.8**	**2.7**	**4.1**	**2.5**
Agriculture & food	12.6	12.7	16.0	8.3	13.0	14.9	13.7	14.2	13.1	14.0
Energy	6.4	5.0	2.6	4.3	5.2	0.9	0.0	0.7	0.5	0.4
Textile & apparel	14.7	21.0	12.6	14.5	16.7	13.0	0.0	12.0	13.8	10.8
Other manufacturing	15.2	11.3	13.0	13.0	12.8	2.9	0.0	2.7	2.4	1.5
Other goods & services	0.0	1.1	1.0	0.8	1.0	0.0	0.0	0.0	0.0	0.0

Notes: 1. Tariffs applied by LAX and NFT. The tariffs are weighted by import values.
2. The regional acronyms are Latin America and the Caribbean excluding Mexico (LAX), Canada, Mexico and the United States (NFT), Western Europe, Japan and other high-income countries (OHY), and rest of the world (ROW).
Source: GTAP Version 5.0.

[12] See, e.g. OECD (1990), Goldin, Knudsen, and van der Mensbrugghe (1993), and van der Mensbrugghe and Guerrero (1998) for indications about treatment of agricultural liberalization in this framework.

Table 3.4: Applied tariffs by region of destination

(percent)

	Latin America and the Caribbean excluding Mexico					Canada, Mexico and the United States				
	LAX	*NFT*	*OHY*	*ROW*	*Total*	*LAX*	*NFT*	*OHY*	*ROW*	*Total*
Wheat	6.6	..	64.8	32.6	18.5	8.3	32.1	170.6	34.0	60.6
Other grains	12.4	0.0	47.4	49.6	33.3	13.9	20.2	31.6	90.8	42.6
Oil seeds	4.1	8.6	15.0	66.0	21.1	6.2	4.4	29.8	78.6	34.6
Sugar	13.3	46.4	83.0	17.9	31.6	12.3	45.0	88.9	23.7	37.4
Other crops	9.2	13.3	10.4	34.7	13.0	9.7	7.4	17.6	26.2	15.3
Livestock	0.0	0.0	8.2	0.0	3.7	7.6	4.1	19.9	10.4	9.6
Energy	6.4	0.9	2.2	2.8	2.7	5.0	0.0	0.5	4.1	0.8
Processed foods	15.5	12.1	31.1	38.4	26.4	16.0	17.4	32.8	43.4	29.1
Textile	14.4	14.4	5.9	6.7	12.7	17.3	0.0	7.2	14.7	5.8
Wearing apparel	17.1	13.9	5.5	0.0	13.5	24.9	0.0	10.8	19.7	8.1
Leather goods	13.6	8.8	5.2	2.1	7.9	14.6	0.0	7.6	12.0	6.1
Basic manufacturing	10.7	3.0	1.8	7.2	5.7	9.8	0.0	2.6	9.5	2.8
Motor vehicles	32.6	2.9	6.4	16.3	24.7	22.2	0.0	5.2	15.7	2.1
Other transportation equipment	11.0	1.7	0.5	2.0	2.5	3.7	0.0	1.1	4.3	2.0
Electronic equipment	9.8	3.4	2.4	0.0	5.4	10.5	0.0	2.2	6.0	2.7
Other manufacturing	12.0	2.8	0.5	3.1	4.9	11.5	0.0	2.1	9.6	3.0
Construction	..	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Services	0.0	0.0	0.0	0.2	0.1	1.1	0.0	0.0	0.4	0.1
Total	**12.8**	**5.9**	**8.2**	**16.2**	**9.8**	**10.5**	**0.8**	**4.3**	**9.9**	**4.3**
Agriculture & food	12.6	14.9	22.1	35.8	21.8	12.7	13.7	35.9	45.1	30.3
Energy	6.4	0.9	2.2	2.8	2.7	5.0	0.0	0.5	4.1	0.8
Textile & apparel	14.7	13.0	5.5	3.2	11.8	21.0	0.0	8.3	14.9	6.7
Other manufacturing	15.2	2.9	1.5	5.9	7.3	11.3	0.0	2.3	8.3	2.7
Other goods & services	0.0	0.0	0.0	0.2	0.1	1.1	0.0	0.0	0.3	0.1

Notes: 1. Tariffs faced by exports from LAX and NFT. The tariffs are weighted by import values.
2. The regional acronyms are Latin America and the Caribbean excluding Mexico (LAX), Canada, Mexico and the United States (NFT), Western Europe, Japan and other high-income countries (OHY), and rest of the world (ROW).

Source: GTAP Version 5.0.

Table 3.5: Bilateral, Trade Weighted Tariffs

(percent)

		Exporter																				
Import	***usa***	***can***	***mex***	***arg***	***bra***	***chl***	***col***	***ven***	***xsm***	***eur***	***rhy***	***jpn***	***chn***	***xea***	***sas***	***row***	***Total***	***hiy***	***liy***	***wsh***	***nft***	***lax***
usa		0.4	0.5	4.6	5.2	3.4	7.1	1.1	9.4	2.2	2.8	2.3	5.7	3.8	7.0	2.1	2.4	0.6	3.1	2.9	1.7	3.3
can	0.8		0.5	6.9	4.2	13.3	0.0	1.5	3.2	3.8	5.3	3.7	8.7	3.6	8.9	2.1	2.0	0.8	4.1	4.1	3.6	4.2
mex	1.8	8.2		9.8	8.2	11.7	0.0	7.2	8.3	7.3	9.9	8.7	13.6	9.6	6.5	4.1	3.8	2.0	7.9	8.3	9.9	8.1
arg	9.6	8.7	14.9		15.4	12.8	0.0	0.0	8.2	11.7	7.4	10.9	16.8	12.7	6.1	4.2	11.6	12.6	10.8	11.6	10.1	11.8
bra	10.4	6.1	14.7	21.8		6.8	0.0	5.8	8.1	10.4	7.7	13.9	15.1	13.3	5.3	4.2	11.0	13.5	9.6	12.7	17.7	11.1
chl	9.2	7.7	10.3	9.8	9.5		7.5	11.0	9.0	8.4	6.6	9.1	10.2	8.7	0.0	6.5	8.9	9.4	8.4	8.8	9.3	8.7
col	8.6	1.9	11.8	9.3	9.7	10.0		14.8	14.5	6.0	2.7	12.8	5.0	13.8	0.0	4.1	8.8	8.6	9.0	8.6	8.1	8.6
ven	10.4	15.7	14.8	12.4	15.3	3.3	15.8		10.6	7.3	5.6	15.7	12.0	9.7	0.0	1.9	10.4	11.7	9.0	9.6	11.6	9.1
xsm	11.8	9.1	8.4	10.7	10.9	11.8	10.3	7.9	11.5	9.2	9.4	12.6	13.5	10.3	3.1	4.7	10.6	11.2	10.2	10.6	9.4	10.8
eur	2.7	3.3	3.1	15.9	7.0	4.5	4.2	2.5	10.1	0.5	4.7	3.6	5.7	4.6	7.3	4.4	1.9	3.2	1.8	1.4	5.2	1.2
rhy	2.0	1.4	0.3	4.1	1.6	1.3	0.0	0.0	1.0	2.6	1.5	2.8	2.9	1.5	2.9	0.9	2.1	2.0	2.2	2.3	1.5	2.4
jpn	9.3	19.4	5.0	13.8	11.0	10.0	10.4	0.0	14.6	3.7	10.4		8.6	6.7	10.2	1.8	7.0	10.3	5.8	6.7	10.2	5.9
chn	13.9	22.6	5.9	22.9	36.6	1.0	0.0	0.0	7.3	11.0	15.7	15.2		16.0	9.5	5.3	14.0	16.0	13.6	14.4	15.7	13.8
xea	9.3	3.9	6.1	34.3	11.0	6.6	5.1	0.0	6.8	5.8	7.6	9.8	18.4	9.2	8.0	4.4	8.3	9.2	8.1	8.8	8.0	9.0
sas	15.5	7.6	8.7	25.5	20.7	15.7	7.3	0.0	5.1	18.8	17.4	27.0	27.4	25.3	19.5	24.5	21.0	15.3	21.8	21.0	17.7	21.6
row	8.7	12.7	5.0	25.9	19.0	16.2	4.8	4.3	10.3	11.1	8.7	8.6	14.4	11.0	13.9	8.2	10.3	10.1	10.3	11.1	10.1	11.1
Total	5.1	2.6	1.7	17.4	10.5	6.7	6.7	3.4	9.6	3.1	6.9	6.1	8.3	6.5	8.7	5.1	4.8	4.9	4.7	4.7	6.4	4.4
hiy	2.1	0.5	0.8	17.3	8.9	6.3	6.2	1.7	8.9	3.5	3.4	2.9	6.4	4.4	7.1	2.4	3.2	1.9	3.8	3.9	2.9	4.1
liy	6.2	8.3	5.3	17.5	11.3	6.8	6.9	6.2	10.2	3.0	8.0	7.5	9.1	7.1	9.3	5.5	5.2	6.9	4.9	4.9	8.3	4.5
wsh	5.3	7.6	4.8	16.1	10.7	6.7	5.9	4.7	10.0	1.6	7.9	7.3	8.5	6.7	8.0	4.6	4.3	5.9	4.0	3.9	8.0	3.5
nft	2.3	3.0	5.0	5.3	11.7	6.1	0.0	4.8	5.2	4.0	2.1	3.3	3.6	2.0	3.3	1.4	3.0	2.9	3.0	3.1	2.3	3.3
lax	6.3	8.3	4.8	17.2	10.4	6.9	6.3	4.7	10.5	1.5	9.1	8.7	9.7	8.3	8.6	4.9	4.5	6.8	4.1	4.0	9.2	3.5

Table 3.6: Regional Definitions

eur	Western Europe
rhy	Rest of high-income
can	Canada
usa	United States
jpn	Japan
chn	China
xea	Rest of East Asia
sas	South Asia
arg	Argentina
bra	Brazil
mex	Mexico
col	Colombia
ven	Venezuela
chl	Chile
xsm	Rest of Latin America and the Caribbean
row	Rest of the World
hiy	High-income countries
liy	Low- and middle-income countries
wlt	World total
lac	Latin America and the Caribbean
lix	Developing countries excluding LAC
nft	NAFTA
wsh	Western Hemisphere
lax	Latin America excluding Mexico

As mentioned in the previous section, the dynamic CGE model is calibrated to a baseline time series reflecting a business-as-usual (BAU) scenario over the period 1997-2015. For reference, Table 3.7 below presents these baseline values of selected variables in the initial and terminal years.

Table 3.7: Summary of baseline scenario

($1997 *billions unless otherwise stated*)

	High-income	*Low- and middle-income*	*Latin America and the Caribbean x/ Mexico*	*Canada, Mexico, and United States*	*Rest of high income*	*Rest of the World*	*World total*
			Aggregate statistics in base year (1997)				
Real GDP	22,181	6,802	1,587	8,965	13,605	4,827	28,983
Population (millions)	867	4,946	396	396	566	4,456	5,814
Labor force	12,049	2,888	693	5,333	6,825	2,086	14,937
Capital stock[1]	8,468	3,088	758	3,475	5,226	2,097	11,557
Exports	4,492	1,704	206	1,199	3,409	1,383	6,196
Imports	4,586	1,820	258	1,341	3,346	1,461	6,406
GDP per capita ($1997)	25,575	1,375	4,010	22,648	24,048	1,083	4,985
GDP share (percent of world total)	76.5	23.5	5.5	30.9	46.9	16.7	100.0
Population share (percent of world total)	14.9	85.1	6.8	6.8	9.7	76.7	100.0
Parity index[2]	513	28	80	454	482	22	100
			Aggregate statistics in final year (2015)				
Real GDP	35,206	14,476	2,757	15,092	20,909	10,925	49,683
Population (millions)	911	6,199	498	464	568	5,580	7,110
Labor force	12,516	3,911	919	6,116	6,555	2,836	16,427
Capital stock	14,850	7,024	1,362	6,379	8,904	5,230	21,875
Exports	7,155	3,591	407	2,111	5,260	2,968	10,745
Imports	7,519	3,642	447	2,310	5,409	2,996	11,161
GDP per capita ($1997)	38,634	2,335	5,535	32,544	36,789	1,958	6,988
GDP share (percent of world total)	70.9	29.1	5.5	30.4	42.1	22.0	100.0
Population share (percent of world total)	12.8	87.2	7.0	6.5	8.0	78.5	100.0
Parity index	553	33	79	466	526	28	100
			Average annual growth rate, 1997-2015 (*percent*)				
Real GDP	2.6	4.3	3.1	2.9	2.4	4.6	3.0
Population	0.3	1.3	1.3	0.9	0.0	1.3	1.1
Labor force	0.2	1.7	1.6	0.8	-0.2	1.7	0.5
Capital stock	3.2	4.7	3.3	3.4	3.0	5.2	3.6
Exports	2.6	4.2	3.9	3.2	2.4	4.3	3.1
Imports	2.8	3.9	3.1	3.1	2.7	4.1	3.1
GDP per capita ($1997)	2.3	3.0	1.8	2.0	2.4	3.3	1.9
GDP share[3]	-5.7	5.7	0.1	-0.6	-4.9	5.3	0.0
Population share[3]	-2.1	2.1	0.2	-0.3	-1.7	1.8	0.0
Parity index[3]	39.9	5.8	-1.2	11.4	44.1	6.3	0.0

Notes: 1. Capital stock is normalized to base year prices.
2. Parity index measures the ratio of per capita income relative to the average world per capita income.
3. The share and index numbers represent differences between the base and final years, not the growth rate.

Source: GTAP 5.0 and model simulation results. See Hertel (1997) and Ianchovichna and MsDougall (2000) for documentation.

4. Simulation Results

Using the multi-country model and baseline information discussed above, we conducted a series of policy experiments reflecting more liberal trade regimes at the global, regional, bilateral, and national levels. In particular, in the first pair of experiments we compare detailed differences between tariff removal within the Americas and global tariff abolition. The results obtained indicate both the potential rewards of further liberalization and the very complex incentives facing participants in regional and global negotiations. Two general results are worthy of emphasis:

- Global trade liberalization (GTL) confers greater aggregate gains, not only on the world but on each country and sub-region in the Americas.
- Regional trade liberalization (RTL) or free trade across the Americas (FTAA) would, in the absence of other negotiating initiatives, benefit member countries in the region but induce significant trade diversion away from the rest of the world.

While these conclusions (particularly on a bilateral basis) have interesting implications for trade negotiations, FTAA and globalization are not considered to be mutually exclusive, and many hope the former will simply provide impetus to be superceded by the latter. Trade divergence and discrimination (*de jure* or *de facto*) induce real economic adjustments, however, and they can complicate the larger negotiating environment in nontrivial ways. If the credibility of global free trade is limited, however, there appear to be substantial incentives to expedite regionalism.[13] Unfortunately, as we shall see later, this may itself undermine global initiative.

At the national level, we also examine unilateral liberalization for a number of larger economies in Latin America. These results are then compared to a case where bilateral partners reciprocate, conferring free market access on the country removing all its tariff barriers. Not surprisingly, these two alternatives differ in important respects, depending upon prior protection patterns and domestic resource constraints. Although there are important general characteristics of the individual country scenarios, our results

[13] On the former issue, see e.g. Hoekman and Kostecki (1995).

suggest that the choice between unilateral and negotiated tariff removal should be made on a case by case basis. Indeed, unilateral removal would rarely be optimal, but negotiated liberalization should be informed by more detailed analysis of partner- and sector-specific trade issues.

4.1. Adjustments in Trade Patterns

Turning to the detailed results, Table 4.1 presents bilateral trade flow adjustments in response to global tariff removal, expressed in both constant (1997 billions of) dollars and as percentage changes with respect to the baseline levels forecast for 2015. By the terminal year of these projections, tariff abolition is estimated to increase global trade by $1.771 trillion 1997 dollars or 16.5%. At the same time, multilateral liberalization will create a highly variegated landscape of bilateral trade adjustments, ranging from a expansion of 274.4% (Brazil's exports to China) to contraction of -67.1% (Venezuela's exports to East Asia). While global trade is expanding by 16.5% in real terms, most non-OECD countries experience total export growth well in excess of this figure. Latin American countries in particular see trade rising sharply, with Argentine and Brazilian exports rising 58% and imports going up by 60% and 50%, respectively.[14] Chile, Colombia, Venezuela, and the Rest of LAC are all above the global average, with only Mexico below average because of its low rates of prior protection.

While the general impression is one of trade growth, with 216 (84%) of the 256 bilateral flows expanding, some bilateral ties will remain fairly constant or even contract. Net changes in bilateral trade are the result of shifting relative real exchange rates, which in turn result from differences in prior protection levels (Table 3.5). Thus it is worth noting that, even in the case of multilateral tariff abolition, trade diversion still results because of asymmetries in prior protection patterns. Fortunately, the diversionary effects are relatively small in this global free trade scenario, and they are far outweighed by trade creation at each national level and, therefore, in the aggregate.

[14] Differences here are due to differences in real exchange rate adjustments. Because of Brazil's higher prior protection (Table 3.5), their real exchange rate rises less and the purchasing power of their exports, under the BOP closure constraint, allows a smaller increase in imports.

Table 4.1: Bilateral Trade Flows - Global Trade Liberalization

(changes in 2015)

Exporters **1997 Billions**

Importers		usa	can	mex	arg	bra	chl	col	ven	xsm	eur	jpn	rhy	chn	xea	sas	row	Total
United States	usa	.0	-18.1	4.0	-.2	2.0	.6	.3	1.5	6.3	47.8	-1.8	-15.6	66.0	14.7	20.9	21.5	149.9
Canada	can	-18.0	.0	.7	.0	.1	.3	.1	.1	.1	12.6	2.3	.2	7.7	1.7	1.6	2.5	12.0
Mexico	mex	-22.6	.4	.0	.1	2.4	.8	.0	.6	.5	14.9	3.3	1.7	6.7	4.6	1.3	1.9	16.4
Argentina	arg	3.2	.2	1.3	.0	12.0	1.1	.0	.0	.7	8.0	.4	.2	4.1	1.5	.4	.8	33.9
Brazil	bra	9.5	.2	2.7	15.9	.0	.3	.0	.6	.9	13.7	2.0	.4	9.1	7.2	.8	3.3	66.6
Chile	chl	1.3	.1	.7	.2	.6	.0	.1	.1	.5	2.2	.0	-.1	2.0	.4	.0	.3	8.2
Colombia	col	.8	-.1	.5	.0	.1	.1	.0	1.5	.7	.7	.0	-.2	.2	.7	.0	.2	5.2
Venezuela	ven	1.0	.2	.7	.1	1.0	-.1	.9	.0	.3	.8	.2	-.1	.8	.4	.0	.1	6.4
Rest of LAC	xsm	10.3	.6	1.5	.8	2.1	1.0	1.2	1.5	.0	4.5	1.5	.1	5.0	.8	.1	.7	36.4
Western Europe	eur	26.0	12.6	4.2	8.8	11.2	1.8	1.9	.5	18.2	.0	10.6	30.4	72.7	32.2	38.3	175.7	247.8
Rest of hi-income	jpn	11.1	2.6	1.4	.0	.6	1.2	.3	.0	.8	20.0	.0	14.8	39.6	18.9	6.8	17.4	135.5
Japan	rhy	12.5	1.0	.5	.2	.4	.4	.1	.0	.4	31.8	3.7	.0	26.4	9.6	6.9	9.3	91.7
China	chn	30.9	6.0	.3	1.5	16.6	-.6	.0	.0	-1.3	48.3	49.8	41.9	.0	73.2	3.5	7.0	277.0
Rest of East Asia	xea	26.4	1.3	1.2	.4	.5	.7	.4	-.1	1.2	37.9	29.1	1.5	55.1	.0	7.6	16.6	247.6
South Asia	sas	4.5	-.1	.0	.4	.3	.1	.1	-.1	-.1	22.0	6.5	-.6	18.1	11.3	.0	32.8	99.3
Rest of the World	row	29.5	6.2	1.7	6.3	16.2	1.1	.5	.2	4.0	117.4	2.4	2.1	39.6	17.0	29.3	.0	337.3
	Total	126.5	13.1	21.3	34.4	65.9	8.8	5.9	6.4	38.0	185.5	110.0	65.0	353.1	261.8	121.7	353.7	1771.1

Percentages

United States	usa	.0	-6.6	2.6	-5.9	9.9	12.1	2.7	9.3	17.8	13.2	-1.2	-12.2	33.8	9.8	67.0	17.4	9.0
Canada	can	-7.8	.0	8.9	8.3	7.2	75.4	9.9	14.9	4.5	24.7	19.3	1.5	59.6	11.5	67.1	19.7	3.3
Mexico	mex	-16.9	17.5	.0	10.1	103.0	84.1	-3.4	66.1	36.6	59.1	50.9	36.6	179.6	68.2	136.3	37.0	8.4
Argentina	arg	29.5	33.8	102.9	.0	91.6	85.2	13.7	-8.1	31.9	52.0	29.5	8.3	127.7	62.4	83.9	31.2	59.5
Brazil	bra	30.5	6.4	118.9	122.3	.0	12.8	-4.6	38.0	15.9	35.9	42.4	7.2	117.5	102.0	72.3	28.5	49.4
Chile	chl	14.1	15.0	29.0	6.5	21.1	.0	35.0	45.7	35.5	24.0	-1.9	-8.2	46.0	14.7	-6.5	17.1	20.3
Colombia	col	7.7	-21.0	44.2	-.6	4.7	18.0	.0	70.0	51.6	9.5	2.6	-20.4	31.3	54.8	-5.7	12.7	16.8
Venezuela	ven	9.8	24.0	51.1	22.5	66.4	-27.1	85.9	.0	31.0	13.7	25.3	-10.1	82.4	48.7	4.1	5.5	23.8
Rest of LAC	xsm	26.6	32.1	25.6	18.0	26.9	51.6	36.6	39.3	.0	19.7	12.3	2.3	62.3	10.8	13.3	14.5	26.4
Western Europe	eur	6.5	32.0	22.2	69.0	39.4	17.2	18.7	12.9	56.8	.0	8.8	25.0	43.9	21.1	77.3	37.8	6.5
Rest of hi-income	jpn	8.8	18.7	27.4	-1.0	9.6	19.7	26.7	1.0	14.2	15.7	.0	24.8	38.9	19.4	69.6	25.7	21.5
Japan	rhy	9.4	10.8	14.8	14.3	8.8	13.8	19.8	4.8	13.2	21.1	3.8	.0	30.5	6.2	69.0	21.9	11.7
China	chn	38.0	75.6	18.0	47.7	274.4	-29.6	6.3	-24.2	-26.2	47.2	49.8	28.7	.0	66.9	31.4	15.7	44.7
Rest of East Asia	xea	18.6	9.7	41.5	13.2	7.7	15.6	55.1	-17.3	26.8	22.7	24.8	1.2	69.9	.0	55.4	20.7	28.6
South Asia	sas	27.9	-7.4	-6.5	38.9	31.8	11.0	34.8	-67.1	-17.1	48.8	92.5	-4.0	129.8	59.8	.0	95.7	61.1
Rest of the World	row	21.5	47.7	23.7	59.9	145.2	85.3	28.2	17.3	44.2	23.0	6.0	3.9	65.8	25.6	98.9	.0	28.2
	Total	8.4	3.4	9.9	57.9	58.0	21.7	18.4	19.9	31.1	4.9	16.3	8.5	47.4	29.2	72.7	31.0	16.5

Now we compare the globalization results with those in Table 4.2, showing the same kind of adjustments in response tariff abolition across the Americas and Caribbean, labeled Free Trade in the Americas. The most arresting feature of these results is of course the scope and magnitude of trade diversion. Because we have ordered the regions with the Americas concentrated in the right columns, there is a distinct block diagonal character to the qualitative results. As one would expect with a regional agreement, trade expands within the region, but at a significant expense of trade with respect to and within the rest of the world. There is nearly uniform expansion of bilateral trade ties across the Americas, and many individual bilateral flows expand more than under globalization. Despite this, however, no country experiences more total export or import growth than it would under global free trade.

For this reason, it is reasonable to ask why an FTAA would be preferable to the first scenario. The most obvious answer has to do with uncertainty and risk aversion, two of the main features of the multilateral negotiating environment that sustain regionalism in an era of globalization. In particular, many countries view a smaller, more certain (and perhaps more expedient) payoff from regional liberalization as preferable to a more hypothetical prospect for global free trade. The relative transparency and tractability of regional accords alone might make them preferable to global ones, but of course they need not even be perceived as mutually exclusive.[15] In fact, some advocates of regionalism, particularly of the North-South variety, argue that they offer important precedence for more comprehensive global negotiations, both in terms of negotiating standards and domestic adjustments arising from conformity. Whether and to what extent the FTAA can be seen as a precursor to global free trade will be discussed in more detail below.

[15] See, e.g. World Bank (2000) for extensive discussion of the incentive properties of regional and multilateral agreements.

Table 4.2: Bilateral Trade Flows - Free Trade Across the Americas

(changes in 2015)

Exporters **1997 Billions**

Importers		usa	can	mex	arg	bra	chl	col	ven	xsm	eur	jpn	rhy	chn	xea	sas	row	Total
United States	usa	.0	4.6	1.3	.7	8.1	.8	.9	.8	20.0	3.8	2.1	.2	.2	-.8	-1.1	.7	42.4
Canada	can	3.7	.0	.4	.1	.7	.4	.0	.0	.7	.2	.3	-.1	.1	-.2	-.1	-.1	6.2
Mexico	mex	3.7	.4	.0	.2	3.7	1.1	.0	.6	.8	-.1	.1	-.1	.1	.1	.0	.0	10.4
Argentina	arg	6.9	.4	1.6	.0	20.4	1.4	.0	.0	.9	-3.9	-.3	-.2	-.8	-.5	-.1	-.2	25.7
Brazil	bra	21.5	.8	3.3	25.5	.0	.7	.0	.8	1.5	-8.5	-1.2	-.6	-1.5	-1.6	-.1	-.8	39.8
Chile	chl	4.3	.2	1.2	.8	1.9	.0	.2	.2	.7	-1.8	-.5	-.2	-.7	-.7	-.1	-.2	5.4
Colombia	col	2.9	-.1	.7	.0	.5	.1	.0	2.3	1.2	-1.6	-.6	-.1	-.1	-.5	.0	-.3	4.4
Venezuela	ven	3.3	.6	.9	.3	1.9	-.1	1.3	.0	.5	-1.3	-.4	-.1	-.2	-.3	.0	-.1	6.2
Rest of LAC	xsm	21.1	.7	2.0	1.3	5.6	1.2	1.3	1.7	.0	-4.7	-1.8	-.6	-2.6	-1.6	-.1	-1.0	28.9
Western Europe	eur	-12.0	-.4	-.2	-2.0	.4	.0	.8	-.2	-1.4	.0	.1	.1	1.0	.6	.4	-.5	-9.0
Rest of hi-income	jpn	-3.5	.0	.0	-.2	.0	.0	.1	.0	-.3	.6	.0	.2	.8	.6	.1	.0	-1.8
Japan	rhy	-4.1	-.1	.0	-.3	.0	.0	.0	.0	-.1	.8	.4	.0	.6	1.0	.1	.0	-1.3
China	chn	-2.6	-.1	.0	-.6	.0	.0	.0	.0	-.2	.2	.0	-.2	.0	.3	.1	-.1	-3.2
Rest of East Asia	xea	-4.3	-.1	.0	-.5	.0	.1	.0	.0	-.1	.6	.2	.2	.5	.0	.1	-.1	-2.9
South Asia	sas	-.5	.0	.0	-.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	-.1	-.8
Rest of the World	row	-3.6	.0	-.1	-1.6	.2	.0	.2	-.1	-.3	1.9	.1	.2	.4	.4	.3	.0	-2.0
	Total	36.9	6.9	10.9	23.5	43.2	6.0	4.9	6.0	30.0	-9.5	-1.6	-1.2	-2.1	-2.6	-.6	-2.4	148.4
																		Percentages
United States	usa	.0	1.7	.9	15.8	40.6	16.9	8.2	4.9	56.9	1.0	1.4	.1	.1	-.5	-3.6	.6	2.6
Canada	can	1.6	.0	4.6	45.2	37.6	105.1	2.7	5.8	23.5	.4	2.3	-.9	.7	-1.4	-2.4	-.5	1.7
Mexico	mex	2.8	17.3	.0	31.5	159.6	109.6	4.0	75.0	52.9	-.4	.9	-2.0	2.0	1.2	.4	.1	5.4
Argentina	arg	63.2	60.6	127.5	.0	155.2	115.2	9.3	-10.7	39.0	-25.2	-20.0	-10.1	-23.3	-21.8	-16.9	-6.2	45.1
Brazil	bra	68.7	26.6	148.0	196.1	.0	31.5	3.0	45.7	26.8	-22.1	-25.4	-12.6	-19.0	-22.8	-9.8	-7.3	29.5
Chile	chl	48.1	39.3	53.7	28.5	67.4	.0	59.7	64.9	51.0	-19.6	-27.7	-19.0	-15.2	-26.1	-12.9	-14.6	13.4
Colombia	col	28.3	-22.3	60.2	9.5	44.2	24.4	.0	107.5	82.6	-21.9	-38.8	-16.5	-20.0	-39.7	-22.7	-17.2	14.3
Venezuela	ven	33.1	56.6	64.7	40.8	125.2	-21.3	113.3	.0	52.5	-22.6	-41.8	-17.0	-26.2	-34.2	-9.8	-5.9	23.0
Rest of LAC	xsm	54.6	40.0	33.5	28.3	71.7	62.8	42.1	45.1	.0	-20.6	-15.1	-20.0	-31.9	-21.5	-20.6	-19.4	20.9
Western Europe	eur	-3.0	-.9	-1.3	-15.7	1.6	.5	7.8	-6.3	-4.2	.0	.1	.1	.6	.4	.7	-.1	-.2
Rest of hi-income	jpn	-2.8	-.2	-.9	-14.4	-.4	.7	5.1	-3.7	-5.3	.5	.0	.3	.8	.6	1.0	.1	-.3
Japan	rhy	-3.0	-.6	-1.2	-16.8	.1	1.6	6.4	-7.7	-2.4	.5	.4	.0	.7	.6	.8	.1	-.2
China	chn	-3.2	-.9	-1.6	-18.6	-.6	.6	3.3	-5.9	-4.9	.2	.0	-.1	.0	.2	.6	-.2	-.5
Rest of East Asia	xea	-3.0	-.9	-1.3	-15.3	-.3	1.2	5.6	-7.5	-1.9	.3	.2	.2	.6	.0	.7	-.1	-.3
South Asia	sas	-3.4	-1.3	-1.8	-17.2	-1.7	1.2	6.5	-10.4	-3.3	.0	-.2	-.1	.3	.3	.0	-.4	-.5
Rest of the World	row	-2.6	-.2	-1.7	-15.4	1.7	-.7	9.3	-7.4	-3.8	.4	.2	.3	.7	.5	1.1	.0	-.2
	Total	2.4	1.8	5.1	39.6	38.0	14.8	15.3	18.7	24.6	-.2	-.2	-.2	-.3	-.3	-.3	-.2	1.4

Apart from the many issues related to uncertainty, impetus for a regional agreement comes from two very practical considerations. First, except for the United States (and including Canada), the FTAA confers on all its members more than 50% of the total import and export growth they would experience under global free trade. Thus a regional agreement, in many ways easier and more certain to negotiate, gives it members over half the total trade gain that globalization might offer. An essential caveat, however, is that the composition of this trade can be very different, and much of it is bought at the expense of relations with partners outside the region. Thus we can see that regionalism is substantially beneficial, but not how it constitutes a path to globalization or, ultimately, can be reconciled with it.

Patterns of adjustment outside the region are complex, with both trade creation and diversion. The removal of an extensive set of tariffs within one region creates a new set of (*de facto*) trade preferences within the rest of the world, and we see offsetting ex-Americas trade growth in most cases, but only in modest quantities. Occasionally, however, small reductions in bilateral trade outside the region are probably induced by trade contraction with respect to the Americas (see e.g. ROW). Generally speaking, economies outside the Americas stand by and watch regional trade expand in the region and contract with respect to them, with only negligible adjustments to their other bilateral ties. Thus most of the trade growth within the Americas is offset by diversion. For countries in the Americas (including their trade with ex-regional economies), GTL induces trade growth of $605 billion, while FTAA expands trade by only $125 billion. Net global trade under GTL was $1,771 billion, but under FTAA it falls to $148 billion or 1.4%, less than ten percent of the global gains.[16]

4.2. Incentive Compatibility

Since the seminal work of Viner on this subject over fifty years ago, there has been sustained debate about the incentive compatibility of regional arrangements, both

[16] Results at the regional and global level can be compared with, e.g. Brown et al (2001, 1992), Anderson, Francois, Hertel, Hoekman, and Martin (2000), Martin and Winters (1996), and Collado et al (1995)

with respect to larger universes of liberalization and, especially, with respect to UTL.[17] Using theoretical models with two or three goods and three countries, a number of authors have argued that regional arrangements are generally dominated, for individual countries, by unilateral liberalization, and that incentives must therefore be devised to effect voluntary participation in RTL.[18] In this section, we present results that both support and directly contradict this conclusion, indicating that the FTAA can dominate or be dominated by unilateralism, depending upon the participating economy under consideration. On the basis of this and other evidence presented in this paper, we recommend that the efficacy of trade agreements be decided empirically rather than with rules-of-thumb inferred from simplified theoretical models.

To better understand the perspective of a prospective FTAA member, we ran a series of policy simulations to estimate the effects of two kinds of unilateralism. In the first case, the country under consideration abolishes tariffs unilaterally and without negotiated or *ex poste* concessions from trading partners. This scenario we refer to simply as UTL. In the second case, we look at an extreme negotiating outcome, where the country abolishes its own tariffs and each of its trading partners reciprocates bilaterally, with the latter maintaining their other external tariffs at baseline levels (called UTLR for UTL Reciprocated). We see these two cases as bracketing the potential outcomes of unilateral tariff abolition for the country in question.

For this discussion, we confine ourselves to the cases of Argentina and Brazil. The results for the former, in terms of bilateral trade flow adjustments, are presented in Table 4.3. The GTL and RTL results here are the same as in Tables 4.1 and 4.2, respectively, but the UTL and UTLR results help complete the picture of policy incentives facing the FTAA entrant. In particular, note that in terms of both total exports and imports, UTL yields the highest growth while, contrary to the incentive paradox alluded to above, RTL dominates UTL. It is noteworthy that the rather unrealistic UTLR scenario comes second to GTL, and this is hardly surprising since the market access enjoyed by Argentina would significantly exceed that of the FTAA. The credibility of

[17] See e.g. Viner (1950), or a more modern statement in Kemp and Wan (1976).
[18] For recent writing in this vein, see e.g. de Melo, Panagariya, and Rodrik (1993), Hoekman and Leidy (1993), and Whalley (1996).

this negotiating outcome, however, is even more tenuous than that of global tariff abolition, and it would not be realistic for most countries to aspire to this outcome.

Table 4.3: Unilateral Trade Liberalization for Argentina

(changes in 2015)

		Exports				***Imports***			**1997 Billions**
		GTL	FTAA	UTL	UTLR	GTL	FTAA	UTL	UTLR
United States	usa	-.2	.7	1.3	-1.9	3.2	6.9	1.2	6.3
Canada	can	.0	.1	.1	.0	.2	.4	.1	.4
Mexico	mex	.1	.2	.2	-.1	1.3	1.6	.6	.8
Argentina	arg	.0	.0	.0	.0	.0	.0	.0	.0
Brazil	bra	15.9	25.5	4.6	9.3	12.0	20.4	5.0	10.3
Chile	chl	.2	.8	.8	-1.0	1.1	1.4	.4	.9
Colombia	col	.0	.0	.1	-.1	.0	.0	.0	.1
Venezuela	ven	.1	.3	.2	-.1	.0	.0	.0	.1
Rest of LAC	xsm	.8	1.3	1.5	-1.5	.7	.9	.3	1.6
Western Europe	eur	8.8	-2.0	3.6	5.3	8.0	-3.9	3.0	9.4
Rest of hi-income	jpn	.0	-.2	.4	.9	.4	-.3	.3	.7
Japan	rhy	.2	-.3	.5	-.9	.2	-.2	.2	1.1
China	chn	1.5	-.6	1.0	3.2	4.1	-.8	1.9	2.0
Rest of East Asia	xea	.4	-.5	.8	4.9	1.5	-.5	.9	1.4
South Asia	sas	.4	-.2	.3	.6	.4	-.1	.0	.3
Rest of the World	row	6.3	-1.6	2.8	9.3	.8	-.2	-.1	1.6
	Total	34.4	23.5	18.0	27.8	33.9	25.7	13.9	36.9
		Exports				***Imports***			**Percentages**
United States	usa	-5.9	15.8	32.3	-45.2	29.5	63.2	11.2	57.3
Canada	can	8.3	45.2	30.2	-10.8	33.8	60.6	11.2	61.2
Mexico	mex	10.1	31.5	32.6	-27.5	102.9	127.5	50.1	66.3
Argentina	arg	.0	.0	.0	.0	.0	.0	.0	.0
Brazil	bra	122.3	196.1	35.7	71.5	91.6	155.2	38.2	78.7
Chile	chl	6.5	28.5	29.1	-38.8	85.2	115.2	34.7	68.3
Colombia	col	-.6	9.5	28.3	-36.0	13.7	9.3	-24.7	76.1
Venezuela	ven	22.5	40.8	26.0	-21.1	-8.1	-10.7	-29.7	81.7
Rest of LAC	xsm	18.0	28.3	32.2	-32.8	31.9	39.0	14.3	71.4
Western Europe	eur	69.0	-15.7	28.1	41.9	52.0	-25.2	19.7	60.8
Rest of hi-income	jpn	-1.0	-14.4	26.1	61.4	29.5	-20.0	22.0	56.1
Japan	rhy	14.3	-16.8	30.0	-56.1	8.3	-10.1	11.7	55.6
China	chn	47.7	-18.6	34.0	105.7	127.7	-23.3	60.0	62.2
Rest of East Asia	xea	13.2	-15.3	26.2	167.1	62.4	-21.8	36.5	59.0
South Asia	sas	38.9	-17.2	29.1	56.6	83.9	-16.9	-4.8	71.5
Rest of the World	row	59.9	-15.4	26.3	88.5	31.2	-6.2	-2.0	61.6
	Total	57.9	39.6	30.3	46.7	59.5	45.1	24.4	64.9

Table 4.4: Unilateral Trade Liberalization for Brazil

(changes in 2015)

		Exports				***Imports***			**1997 Billions**
		GTL	FTAA	UTL	UTLR	GTL	FTAA	UTL	UTLR
United States	usa	2.0	8.1	9.3	-8.4	9.5	21.5	6.1	12.9
Canada	can	.1	.7	.7	-.7	.2	.8	-.1	1.2
Mexico	mex	2.4	3.7	1.3	-.3	2.7	3.3	1.7	1.0
Argentina	arg	12.0	20.4	7.5	3.8	15.9	25.5	11.6	7.3
Brazil	bra	.0	.0	.0	.0	.0	.0	.0	.0
Chile	chl	.6	1.9	1.4	-.3	.3	.7	-.2	1.1
Colombia	col	.1	.5	.6	.1	.0	.0	-.1	.1
Venezuela	ven	1.0	1.9	.9	1.3	.6	.8	.3	.8
Rest of LAC	xsm	2.1	5.6	3.4	-.4	.9	1.5	.7	2.1
Western Europe	eur	11.2	.4	10.2	-2.2	13.7	-8.5	5.5	15.9
Rest of hi-income	jpn	.6	.0	2.0	1.2	2.0	-1.2	2.2	1.9
Japan	rhy	.4	.0	1.5	-2.2	.4	-.6	.9	2.0
China	chn	16.6	.0	2.1	22.4	9.1	-1.5	4.7	3.7
Rest of East Asia	xea	.5	.0	2.2	-.6	7.2	-1.6	5.0	3.0
South Asia	sas	.3	.0	.3	.6	.8	-.1	.1	.5
Rest of the World	row	16.2	.2	3.8	25.2	3.3	-.8	.2	5.1
	Total	65.9	43.2	47.2	39.4	66.6	39.8	38.6	58.6
		Exports				***Imports***			**Percentages**
United States	usa	9.9	40.6	46.6	-41.9	30.5	68.7	19.5	41.1
Canada	can	7.2	37.6	39.3	-35.5	6.4	26.6	-4.8	42.7
Mexico	mex	103.0	159.6	55.9	-12.4	118.9	148.0	75.6	45.6
Argentina	arg	91.6	155.2	57.1	28.9	122.3	196.1	89.3	55.8
Brazil	bra	.0	.0	.0	.0	.0	.0	.0	.0
Chile	chl	21.1	67.4	48.5	-11.6	12.8	31.5	-8.3	44.5
Colombia	col	4.7	44.2	50.7	5.2	-4.6	3.0	-28.8	45.2
Venezuela	ven	66.4	125.2	58.6	85.5	38.0	45.7	19.7	48.4
Rest of LAC	xsm	26.9	71.7	43.8	-5.4	15.9	26.8	12.4	38.3
Western Europe	eur	39.4	1.6	36.0	-7.8	35.9	-22.1	14.4	41.6
Rest of hi-income	jpn	9.6	-.4	35.3	20.7	42.4	-25.4	45.8	40.4
Japan	rhy	8.8	.1	33.3	-48.5	7.2	-12.6	17.5	38.9
China	chn	274.4	-.6	34.6	369.6	117.5	-19.0	60.8	48.2
Rest of East Asia	xea	7.7	-.3	34.7	-9.0	102.0	-22.8	71.1	42.3
South Asia	sas	31.8	-1.7	31.1	75.1	72.3	-9.8	4.9	46.3
Rest of the World	row	145.2	1.7	34.2	225.6	28.5	-7.3	1.9	44.4
	Total	58.0	38.0	41.5	34.7	49.4	29.5	28.7	43.5

The case of Brazil (Table 4.4) is more ambiguous, with import growth under the RTL dominating unilateralism but the opposite outcome for exports. To understand the difference in these results, we must take a closer look at adjustments in the real exchange rate. Under UTL, both Argentina and Brazil experience significant real depreciation because they abolish tariffs alone. When their partners reciprocate, the net effect on the real exchange rate depends on the prior asymmetry between protection they maintained and faced. Given that both country's imports rise more than exports (under the fixed BOP closure), both are experiencing real appreciation under UTLR, so it is apparent that both faced higher barriers to their own exports. This real exchange rate appreciation effect retards Brazilian export growth under the UTLR, and the same forces limit depreciation under the FTAA. Brazil's UTL, however, has a dramatic depreciation effect, allowing more competitive exports to expand a full (41.5-28.7) 12.8 percentage points higher that imports. The net trade effect of depreciation under FTAA is only (38.0-29.5) 8.5 points, this because FTAA members also drop tariffs against Brazilian exports.

Thus it becomes apparent that protection patterns exert very complex influences on the incentives governing trade negotiation. While this fact is hardly surprising, the net effect of in terms of real exchange rate adjustment would be very difficult to predict without detailed empirical analysis. Models of the type used here have the advantage of being calibrated to detailed data of this kind and capture a myriad of indirect effects that give rise to the structural adjustments we are talking about. Because they use consistent economywide data sets, they can also produce aggregate measures of adjustment and welfare, and these are most often used in the literature to assess national policies.

We have focused on real structural adjustments until now because the political economy of trade policy is often determined, not from the top down, but from the bottom up. For this reason, considerations of aggregate welfare can often be subordinated to sectoral or other more narrow economic interests. Whether these considerations ultimately decide policy at the unilateral, bilateral, regional, or global level is less important than the ability of policy makers to recognize and anticipate detailed adjustment costs and benefits. For this reason, the main emphasis of the paper is on structural adjustment patterns. Beneath the smooth veneer of aggregate social welfare functions, there is often significant give and take across the economy. Although these

might be offsetting in the aggregate, the real trade-offs involved command much of the attention of policy makers.

Having said this, it is still reasonable to examine the RTL incentive paradox from an aggregate perspective. In Table 4.5, we present aggregate equivalent variation (EV) national income measures corresponding to each of the scenarios discussed above, in addition to a few more unilateral scenarios for other FTAA participants.[19] In addition to the country measures, we also reproduce EV calculations for five aggregates at the bottom of the table.

As would be expected, GTL confers the most uniform gains upon all countries. Likewise, conventional intuition about the FTAA is borne out, with members benefiting, generally speaking, at the expense of nonmembers. Despite these tradeoffs, however, it is noteworthy that all the aggregate groups benefit from the FTAA, including the world as a whole and the Developing Countries (DCs), excluding Latin America and the Caribbean (LAC).[20] Also relevant from an incentive viewpoint is the fact that, for only one member country (Mexico) is the FTAA more beneficial in the aggregate than GTL. It is worth reiterating, however, that global traded negotiations are a very uncertain affair, and the risk-adjusted EV of the GTL might be well below the estimates given here. Even if the RTL is not seen as milestone on the way to GTL, it could be preferred for its relative certainty. As was already mentioned, the characteristics of proximity, shared history, and other institutional congruity are big advantages for the regional agenda.

[19] Equivalent Variation income is a price-adjusted measure of aggregate welfare, subject to many definitions in the economic literature. The version we are using is described in detail in the appendix.

[20] Compare these results to those for the Uruguay Round in Martin and Winters (1996) and, more specifically, Harrison, Rutherford, and Tarr (1996) and Francois, McDonald, and Nordstrom (1996).

Table 4.5: Equivalent Variation National Income Effects

(percent of 2015 baseline income)

				Mexico		*Argentina*		*Brazil*		*Chile*		*Colombia*		*Venezuela*		*Rest of LAC*	
		GTL	*FTAA*	*UTL*	*UTLR*	*UTL*	*UTLR*	*UTL*	*UTLR*	*UTL*	*UTLR*	*UTL*	*UTLR*	*UTL*	*UTLR*	*UTL*	*UTLR*
United States	usa	.2	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Canada	can	.3	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Mexico	mex	.1	.4	.4	.9	.0	.0	.1	.0	.0	.0	.0	.0	.4	.0	.0	.0
Argentina	arg	1.2	.6	.0	-.1	-.3	3.7	.8	-.4	.0	.0	.0	.0	.0	.0	.0	.0
Brazil	bra	1.6	.5	.0	-.1	.2	-.2	.2	3.3	.0	.0	.0	.0	.0	.0	.0	-.1
Chile	chl	.6	.1	.1	-.2	.2	-.3	.1	-.2	-.5	4.1	.0	.0	.1	.0	.1	-.1
Colombia	col	.2	.1	.0	-.1	.0	.0	.0	-.1	.0	.0	-.3	1.9	.0	-.3	.2	-.2
Venezuela	ven	1.5	1.2	.1	-.2	.0	-.1	.2	-.2	.0	.0	.2	-.1	.1	1.5	.1	.1
Rest of LAC	xsm	1.9	1.0	.0	-.2	.0	-.1	.1	-.3	.0	-.1	.0	-.1	.0	-.1	.2	5.9
Western Europe	eur	.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Rest of hi-income	jpn	.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Japan	rhy	2.3	-.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
China	chn	1.1	-.1	.0	.0	.0	.0	.0	-.1	.0	.0	.0	.0	.0	.0	.0	.0
Rest of East Asia	xea	2.8	-.1	.0	.0	.0	-.1	.1	-.1	.0	.0	.0	.0	.0	.0	.0	.0
South Asia	sas	.5	-.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Rest of the World	row	1.0	.0	.0	.0	.0	-.1	.0	-.1	.0	.0	.0	.0	.0	.0	.0	-.1
High-income countries	hiy	.4	.1	.0	.0	.0	.1	.1	.2	.0	.0	.0	.0	.0	.0	.0	.0
Low- and mid-income	liy	1.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
World total	wlt	.8	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0
LAC Only	lac	1.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
DCs Excluding LAC	lix	.9	.0	.0	.0	.0	-.1	.0	-.1	.0	.1	.0	.1	.0	.0	.0	-.1

Of more specific interest to the present discussion are the UTL and UTLR results. From an aggregate welfare perspective, it would appear that the RTL-UTL incentive paradox is vacuous. No country considered here would be better off liberalizing unilaterally than joining the FTAA, except in the very improbable event it could negotiate tariff remission with all its bilateral partners around the world. In many cases, the real exchange rate effects of UTL actually reduce real national income. Thus we see that the ultimate effect of unilateral liberalization, whether it is detrimental, beneficial, or even more beneficial than regionalism, is clearly a case-by-case policy question.

The results for UTLR are thought provoking, however, since they imply that there might be some optimal level of regionalism. This is because the EV gains under UTLR exceed both FTAA and GTL in every case considered. The large EV gains in this scenario are mainly the result of increased national purchasing power resulting from real exchange rate appreciation. It is tempting to wonder if there some kind of regional enlargement would capture some of these gains and increase those of FTAA. This process would be unlikely to ever exceed the gains of GTL, however, simply because of the fallacy of composition. The real exchange rate appreciation under UTLR is so great only because one country enjoys *de facto* preferences from all its partners. This benefit cannot be aggregated.

4.3. Sequencing and Structural Congruence

Advocates of regionalism often argue that it can be an expedient and even necessary step in the ultimate evolution to globalization. This assertion is supported and contested from many angles, but across the vast literature that has emerged on the subject, there are few landmark conclusions or sweeping generalities. On one hand, there are intense debates about the welfare economics of sequencing of and choice between regimes of trade liberalization, most of which are unresolved. On the other, there is a general recognition of the constructive role that regionalism plays in raising awareness about the benefits of more liberal trade. Certainly, it is true that regionalism is often easier to effect because of shared history, institutions, and generally lower transactions costs, both in the bargaining process and in the economics of the new steady state. It is also true that consummation of a regional agreement can be an important precedent,

building public and private institutional capacity and general readiness for more collaborative (and statutory) approaches to external economic relations.

Whether an individual country's membership in a regional arrangement is a logical stepping stone to globalization, however, also depends in an essential way on the patterns of structural adjustment arising from the two trade regimes. This is clearly a country and region specific issue, and again is best decided on empirical grounds. Using the model and simulations already discussed in this section, we examine this question for the GTL, FTAA, and UTL liberalization scenarios. Our findings indicate that the compatibility of these regimes is limited, but most seriously so in the case of unilateralism. Generally speaking, regionalism as reflected in the FTAA can probably make the transition to more global free trade with out too much intermediate structural distortion. It is also apparent, however, that there is not much of a first-mover advantage for individual countries to preempt regionalism with unilateralism, because for most this would mean structural changes in direction incompatible with comparative advantages under FTAA or GTL.

To assess the compatibility of trade regimes, we have decided to focus on a concept which we term structural congruence. By this we mean similarity in the composition of real sectoral output within a country under two different policy regimes. For example, two policies will lead to different percentage changes in the vector of sectoral output. If these percent change vectors are a positive scalar multiple of one another, we say the two policies are structurally congruent. In other words, the policies differ in their output composition effect only by a uniform (positive) aggregate growth factor. A weaker congruence would allow for negative scalar multiples, meaning output can increase or decrease, but maintains the same structural composition. The basic logic of this is that two congruent trade regimes will only affect the level of growth, and transition between them will not induce significant structural adjustment. Incongruent policies can, on the other hand, expand and contract completely different activities, and the transition between them would have much higher adjustment costs for the same macroeconomic growth benefit.

Ideally, a larger agenda for trade liberalization would be a congruent extension of an intermediate one. This is the explicit or implicit logic behind many of the arguments for reducing tariff rate dispersion, as well as the tariffication and phase-out approaches to liberalization: Get the imbalances out of relative prices first and then wind down the aggregate external bias uniformly. Unfortunately, in a second-best world these approaches can have unanticipated consequences, so again rules-of-thumb are of limited utility. What we do instead is to estimate the induced sectoral adjustments and appraise the congruence of trade regimes directly. The results, not surprisingly, are highly variegated.

In Table 4.6, we give percent output changes (with respect to baseline levels in 2015) for selected FTAA countries and five aggregated sectors (there are 18 in the model), as these would be induced by nine different trade regimes. The latter policies are the now familiar GTL, FTAA, as well as unilateral (unreciprocated) trade liberalization (UTL) for Mexico, Argentina, Brazil, Chile, Colombia, Venezuela, and Rest of LAC. It is immediately apparent from these results that the FTAA has limited structural congruence with GTL. For the United States, for example, only one of the three aggregate sectors (Ag and Food) moves in the same direction, expanding output under both regimes. The U.S. Textile and Apparel sector would actually expand slightly (with respect to 2015) under the FTAA, while it would contract significantly under GTL. The relatively small percent effects for the U.S. under FTAA might make these qualitative differences less troubling, but in all the cases discussed here, it is essential to keep in mind the political economy of trade policy. Very different interests will be mobilized under a regime that realizes sectoral expansion, compared to those arising when sectors contract. This implies a policy landscape between regionalism and multilateralism that is full of obstacles and pitfalls, offsetting and in some cases nullifying the benefits of regionalism in terms of precedence, institution building, etc.[21] Of course, the net benefits of regional integration remain, but these results indicate that the FTAA will introduce new impediments to realizing the larger gains from globalization.

[21] For discussion of this in another regional context, see Lee, Roland-Holst, and van der Mensbrugghe (1999).

Tab le 4.6: Sectoral Output Adjustments

(percent changes with respect to 2015 levels)

			UTL								
			GTL	***FTAA***	***mex***	***arg***	***bra***	***chl***	***col***	***ven***	***xsm***
United States	**usa**	Agriculture & Food	7.9	.6	1.0	-.1	.0	.0	.0	1.0	.0
		Energy	.0	-.1	.0	.0	.0	.0	.1	.0	-.1
		Textile & Apparel	-13.4	1.5	-.9	.0	.0	.0	.1	-.9	1.7
		Other manufacturing	-1.1	.0	-.3	.0	.0	.0	.0	-.3	-.1
		Other goods & services	.1	.0	.0	.0	.0	.0	.0	.0	.0
Canada	**can**	Agriculture & Food	24.2	-1.0	.6	-.2	.3	.1	.0	.6	.2
		Energy	-1.0	.6	-.1	-.1	.0	.0	.3	-.1	-.2
		Textile & Apparel	-27.2	-2.8	.0	.0	.1	.0	.0	.0	-.2
		Other manufacturing	-4.8	.1	-.3	.0	-.1	.0	-.1	-.3	.0
		Other goods & services	.3	.0	.0	.0	.0	.0	.0	.0	.0
Mexico	**mex**	Agriculture & Food	-3.1	-4.0	-6.9	-.1	.0	.0	.0	-6.9	.0
		Energy	6.0	.8	3.5	-.2	-.1	.0	.3	3.5	-.2
		Textile & Apparel	-16.9	-1.1	-2.3	.0	-.1	.0	.0	-2.3	-.4
		Other manufacturing	2.6	2.3	3.3	.1	.1	.0	.0	3.3	.1
		Other goods & services	.4	.2	.3	.0	.0	.0	.0	.3	.0
Argentina	**arg**	Agriculture & Food	15.1	-.6	.0	6.8	-2.8	.1	.0	.0	.1
		Energy	-2.2	-.3	-.1	8.1	-2.8	.9	.0	-.1	-1.3
		Textile & Apparel	-8.2	-.8	.0	-1.3	-.8	-.2	.0	.0	.1
		Other manufacturing	-6.2	4.4	.0	-4.5	3.6	-.1	.0	.0	.0
		Other goods & services	.0	-.2	.0	-.1	.3	.0	.0	.0	.0
Brazil	**bra**	Agriculture & Food	17.5	-.4	-.1	-.4	1.7	.0	.0	-.1	.0
		Energy	.2	-.9	-.1	-.6	1.9	.0	.0	-.1	-.4
		Textile & Apparel	-6.2	3.7	-.1	.2	-.6	-.1	.0	-.1	.2
		Other manufacturing	-5.9	.5	.1	.2	-.8	.0	.0	.1	.0
		Other goods & services	.2	.0	.0	.0	.3	.0	.0	.0	.0
Chile	**chl**	Agriculture & Food	21.1	4.7	.0	-.5	.7	1.3	.2	.0	.4
		Energy	-10.8	-7.1	-.2	-.9	.6	-8.1	.0	-.2	-.7
		Textile & Apparel	-13.8	-.8	-.3	.3	-.2	-6.8	-.2	-.3	-.4
		Other manufacturing	-4.6	1.5	.1	.4	-.4	3.6	-.1	.1	.0
		Other goods & services	.6	-.1	.0	.1	.1	-.1	.0	.0	.0
Colombia	**col**	Agriculture & Food	9.2	4.4	.0	-.1	.1	.0	2.1	.0	-.1
		Energy	-12.1	-11.8	-.1	.1	.4	.0	-4.3	-.1	.9
		Textile & Apparel	-3.5	6.9	.0	.0	-.2	-.2	.6	.0	-.4
		Other manufacturing	-6.4	-1.3	-.1	.0	-.4	.1	-3.6	-.1	.0
		Other goods & services	.0	-.1	.0	.0	.0	.0	.3	.0	.0
Venezuela	**ven**	Agriculture & Food	.2	-1.4	.0	-.3	.1	.0	.3	.0	.0
		Energy	9.0	5.7	.0	.1	.6	.0	-.8	.0	-.3
		Textile & Apparel	-11.6	-5.6	-.1	.0	-.2	.0	-.1	-.1	-.6
		Other manufacturing	-5.1	.1	.1	.0	-.9	.0	1.1	.1	.6
		Other goods & services	-.1	-.2	.0	.0	.1	.0	.1	.0	.0
Rest of LAC	**xsm**	Agriculture & Food	22.6	.6	.1	-.3	.3	.1	-.1	.1	.4
		Energy	-.6	1.4	-.3	-.3	-.8	.3	.1	-.3	14.0
		Textile & Apparel	-13.9	27.5	-.4	.5	.5	-.2	.0	-.4	-5.4
		Other manufacturing	-9.1	-2.6	.1	.2	-.2	-.1	.1	.1	2.0
		Other goods & services	-.7	-1.1	.0	.0	.0	.0	.0	.0	.5

The lack of structural congruence is more dramatic among other FTAA members. Canada has two sectors moving in the same direction, two in sharply and one in moderately opposing directions. Mexico exhibits the highest congruence of the group, with complete qualitative agreement and surprisingly homogeneous quantitative shifts. Argentina would experience a reversal of fortune in Agriculture and Food by moving from FTAA to GTL, with a small contraction leading to a large (15.1%) expansion of real output. Adjustments in Brazil are diametrically opposed between the FTAA and GTL, with large opposing shifts in four of five aggregate sectors. Chile, Colombia, and Venezuela all show higher levels of FTAA-GTL congruence, with notable exceptions. The latter include Textiles and Apparel in Colombia, which would expand under FTAA but contract under GTL. The same reversal would be even more dramatic for Rest of LAC. These results particularly reinforce the perception of regionalism as *de facto* discriminatory mechanism, effecting trade diversion incompatible with extension to global free trade. Clearly, Textiles and Apparel in Brazil, Colombia, and Rest of LAC are benefiting from a competitive disadvantage that FTAA confers on Asian exporters.

Comparison with the UTL results is instructive for a variety of reasons. Firstly, we can compare the congruence of UTL with the GTL and FTAA regimes to better interpret incentive properties. The greater the structural congruence, the easier it might be to transition from most expedient unilateralism to eventual globalization. It can also be argued that congruence between UTL and FTAA confers a first-mover advantage on the country in question. The underlying political economy of adjustment being similar, they can implement UTL and realize its gains quickly, making the transition to FTAA without too much more structural or political adjustment. Unfortunately, there are no general tendencies apparent in these results to support either reasoning. In some cases (Mexico, Chile, Colombia), UTL is fairly congruent with FTAA, while in some (Mexico and Brazil) it is more congruent with GTL. Only Mexico has high congruence across all three regimes, but in most cases unilateralism would be a false start toward regionalism, globalization, or both.

4.4. Endogenous Productivity Growth

One final issue we want to address in these scenarios is that of endogenous productivity growth. It has been strenuously argued in recent years that one of the primary benefits of greater outward orientation is the internalization of factors, practices, and processes that embody every higher productivity standards. These can be infused into domestic economic activities through a myriad of channels, including foreign partnership, technology transfer, access to foreign education and institutions, and even policy reform conferred by official bilateral and multilateral ties. Whatever the mechanisms, most are thought to affect domestic productivity in a way that is positively correlated with economic openness.

To assess the empirical significance of these influences, we have incorporated endogenous productivity growth in our model and recast the GTL and FTAA scenarios using median case estimates of the relevant structural parameters.[22] The results are summarized for aggregate welfare in Table 4.7. As one might reasonably expect, the real gains from liberalization can be significantly greater, but the make much more difference in the transition to globalization than to the outcome of FTAA. The reason for this is primarily the scope of trade expansion, which is over four times greater under GTL (see Table 4.1). It should be noted that some countries (Brazil, Colombia, and Venezuela) attain a much larger percentage of their GTL gains, under FTAA, with productivity growth than without it. This is because the productivity boost is greatest for countries removing the most prior protection.

[22] This specification is discussed more detail in the appendix.

Table 4.7: Equivalent Variation Effects - Endogenous Productivity

(percent of 2015 baseline income)

		GTL		*FTAA*	
		Neutral	***P-shock***	***Neutral***	***P-shock***
United States	usa	.2	.5	.1	.1
Canada	can	.3	.4	.1	.1
Mexico	mex	.1	.5	.4	.5
Argentina	arg	1.2	2.0	.6	1.9
Brazil	bra	1.6	3.1	.5	1.5
Chile	chl	.6	.8	.1	.2
Colombia	col	.2	1.0	.1	.7
Venezuela	ven	1.5	2.0	1.2	1.6
Rest of LAC	xsm	1.9	2.3	1.0	1.3
Western Europe	eur	.8	1.2	.0	.0
Rest of hi-income	jpn	.8	1.5	.0	.0
Japan	rhy	2.3	2.1	-.1	.0
China	chn	1.1	5.3	-.1	-.1
Rest of East Asia	xea	2.8	3.7	-.1	-.1
South Asia	sas	.5	3.1	-.1	.0
Rest of the World	row	1.0	2.4	.0	.0
High-income countries	hiy	.4	.7	.1	.3
Low- and mid-income	liy	1.1	2.1	.0	.0
World total	wlt	.8	1.6	.0	.1
LAC Only	lac	1.1	2.0	.0	.0
DCs Excluding LAC	lix	.9	2.3	.0	.0

5. Conclusions and Extensions

In this paper, we use a global empirical simulation model to examine a variety of trade liberalization scenarios for the Americas. In particular, we compare global trade liberalization (GTL) that abolishes all tariffs, regional tariff liberalization (RTL) that eliminates tariffs within the Americas and Caribbean, and unilateral trade liberalization (UTL) by selected Latin American countries. Our results are consistent with some conventional intuition, but in other ways contradict conclusions obtained from simplified theoretical models. For example, we find that GTL yields the greatest benefit, both for the rest of the world and for RTL members, while an FTAA arrangement is beneficial to all members, expands intra-regional trade fivefold, but induces significant trade diversion away from nonmembers. Despite the fact that GTL gains are many times those of the RTL for members, one might still expect to see the latter negotiated because of uncertainties about realization of GTL and because members may not see the RTL and GTL as mutually exclusive.

Our results do not support the theoretical suggestion, around since the 1950's, that unilateralism generally dominates RTL membership, or its corollary that prospective members must be induced to join by incentives written into the RTL agreement. Indeed, in most cases we study, prospective members gain significantly less from UTL and would probably experience structural reversals by pursuing this as a first move toward RTL participation, thus reducing the net benefit of the latter. The only UTL that generally dominates RTL is one where each of the country's trading partners reciprocates by eliminating (only) bilateral tariffs. Not only is this a very implausible scenario, but such benefits do not aggregate into anything representing a larger regional agreement, reflecting none other than the fallacy of composition.

We also examine the issue of structural congruence between the three levels of trade liberalization, meaning the extent to which different policies induce harmonious shifts in output structure. Our findings indicate that, for most countries, GLT, RTL, and UTL induce resource pulls and shifts in output composition in significantly different directions. This implies that, in a hypothetical transition from UTL to RTL to GTL (or any pair wise transition), output in many sectors would reverse themselves and

sometimes significantly so. This in turn would give rise to very different regimes of political economy, depending on the beginning and ending policy scenarios. Thus, for example, it may not be reasonable to see the FTAA as a milestone on the way to GTL, apart from general learning and institution building in the domains of multilateralism generally and trade negotiation in particular.

The most salient lesson from this preliminary work, however, may be the essential role that detailed empirical analysis can play in support of strategic trade policy. It is obvious from the complexity of influences giving rise to our results that policy makers relying on economic theory, intuition, or rules of thumb alone are unlikely to adequately foresee the consequences of their actions. Not only are the magnitudes of induced adjustments difficult to ascertain because of the scope of indirect effects, but qualitative outcomes often directly contradict intuition or the predictions of highly simplified models, leading to the opposite results from the intended ones. Fortunately, models and data of the kind used here are now well established research tools. They can now be applied to a large universe of issues to better elucidate the economic consequences of policy before it is implemented.

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7. Appendix

7.1. Equivalent Variation Aggregate National Income

Aggregate income gains and/or losses summarize the extent trade distortions are hindering growth prospects and the ability of economies to use the gains to help those whose income could potentially decline.

Real income is summarized by Hicksian equivalent variation (EV). This represents the income consumers would be willing to forego to achieve post-reform well-being (u^p) compared to baseline well-being (u^b) at baseline prices (p^b):

$$EV = E\left(p^b, u^p\right) - E\left(p^b, u^b\right)$$

where E represents the expenditure function to achieve utility level u given a vector of prices p (the b superscript represents baseline levels, and p the post-reform levels). The model uses the extended linear expenditure system (ELES), which incorporates savings in the consumer's utility function. See Lluch (1973) and Howe (1975). The ELES expenditure function is easy to evaluate at each point in time. (Unlike the OECD treatment of *EV*, we use baseline prices in each year rather than base year prices. See Burniaux et al. (1993)). The discounted real income uses the following formula:

$$CEV = \sum_{t=2005}^{2015} \beta^{(t-2004)} EV_t^a \; / \; \sum_{t=2005}^{2015} \beta^{(t-2004)} Y_t^d$$

where *CEV* is the cumulative measure of real income (as a percent of baseline income), β is the discount factor (equal to 1/(1+*r*) where *r* is the subjective discount rate), Y^d is real disposable income, and EV^a is adjusted equivalent variation. The adjustment to *EV* extracts the component measuring the contribution of household saving, since this represents future consumption. Without the adjustment, the *EV* measure would be double counting. The saving component is included in the *EV* evaluation for the terminal year. Similar to the OECD, a subjective discount rate of 1.5 percent is assumed in the cumulative expressions.

7.2. Specification of Endogenous Productivity Growth

Productivity in manufacturing and services is the sum of three components:

- a uniform factor used as an instrument to target GDP growth in the baseline simulation
- a sector-specific fixed shifter which allows for relative differentials across sectors (for example, manufacturing productivity two percentage points higher than productivity in the services sectors)
- a component linked to sectoral openness as measured by the export-to-output ratio

The latter takes the following functional form:

$$(1) \qquad \gamma_i^e = \chi_i^0 \left(\frac{E_i}{X_i} \right)^\eta$$

where γ^e is the growth in sectoral productivity due to the change in openness, χ^0 is a calibrated parameter, E and X represent respectively sectoral export and output, and η is the elasticity. The parameter χ^0 has been calibrated so that (on average) openness determines roughly 40 percent of productivity growth in the baseline simulation, and the elasticity has been set to 1.

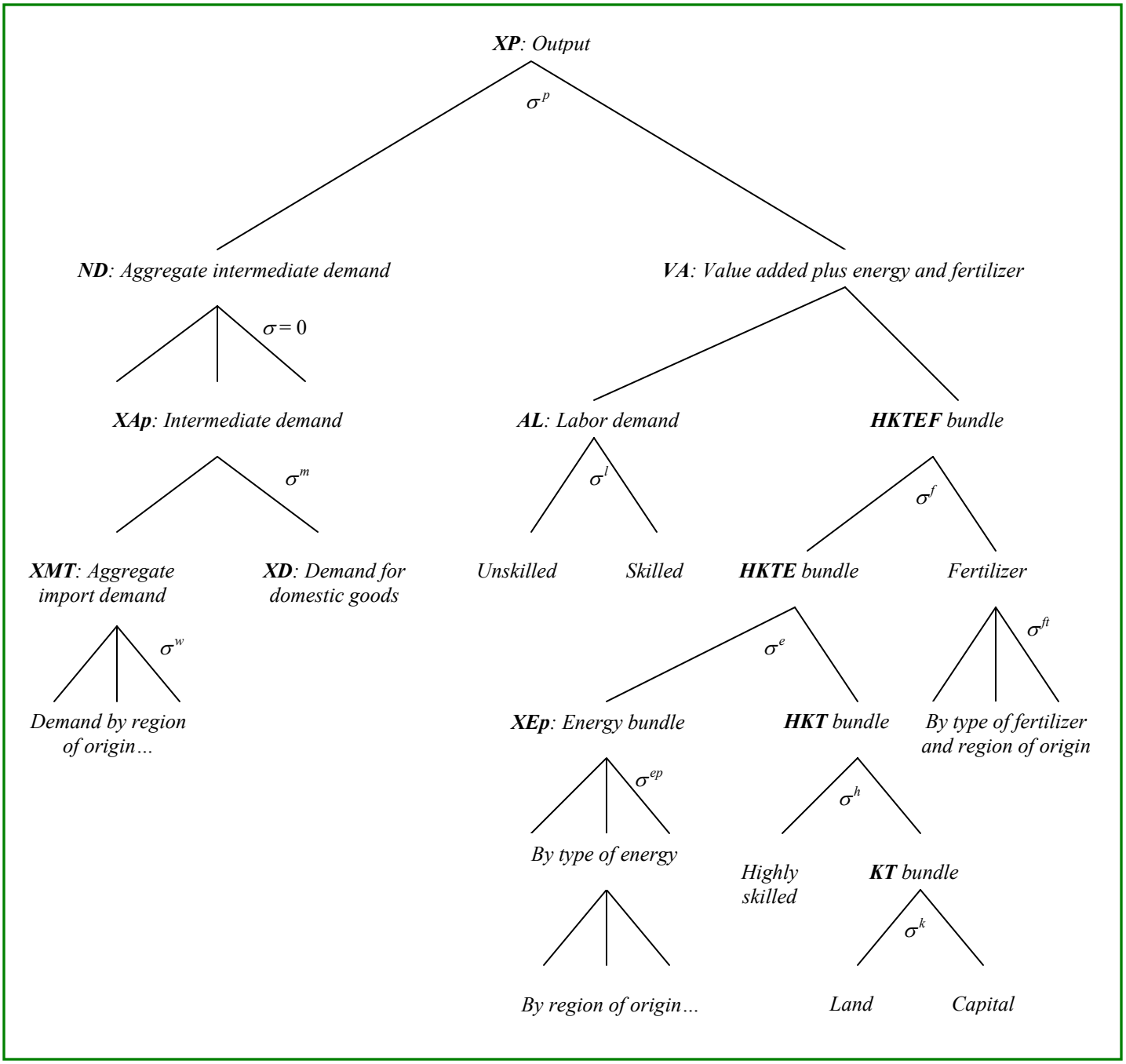
In agriculture, productivity is fixed in the baseline, set to 2.5 percent per annum in most developing countries (based on estimates found in Martin and Mitra, 19xx). However, a share of the fixed productivity is attributed to openness, using equation (1).

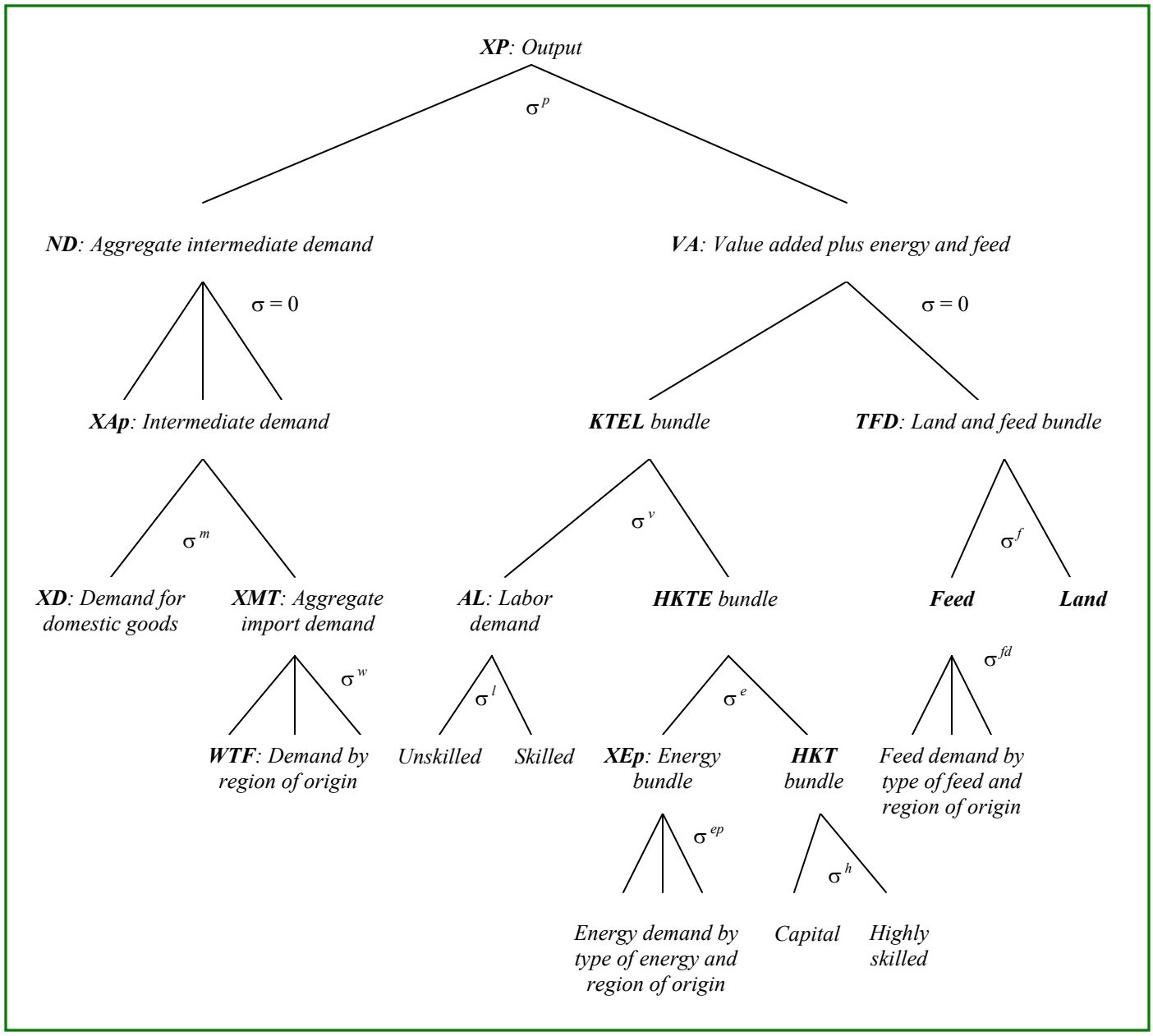
In the baseline, GDP growth is given. Agricultural productivity is similarly given, and equation (1) is simply used to calibrate the shift parameter, χ^0, so that a share of agricultural productivity is determined by sectoral openness. Average productivity in the manufacturing and services sectors is endogenous and is calibrated in the baseline to achieve the given GDP growth target. The economy-wide (excluding agriculture) productivity parameter is endogenous. Equation (1) is used to calibrate the same χ^0

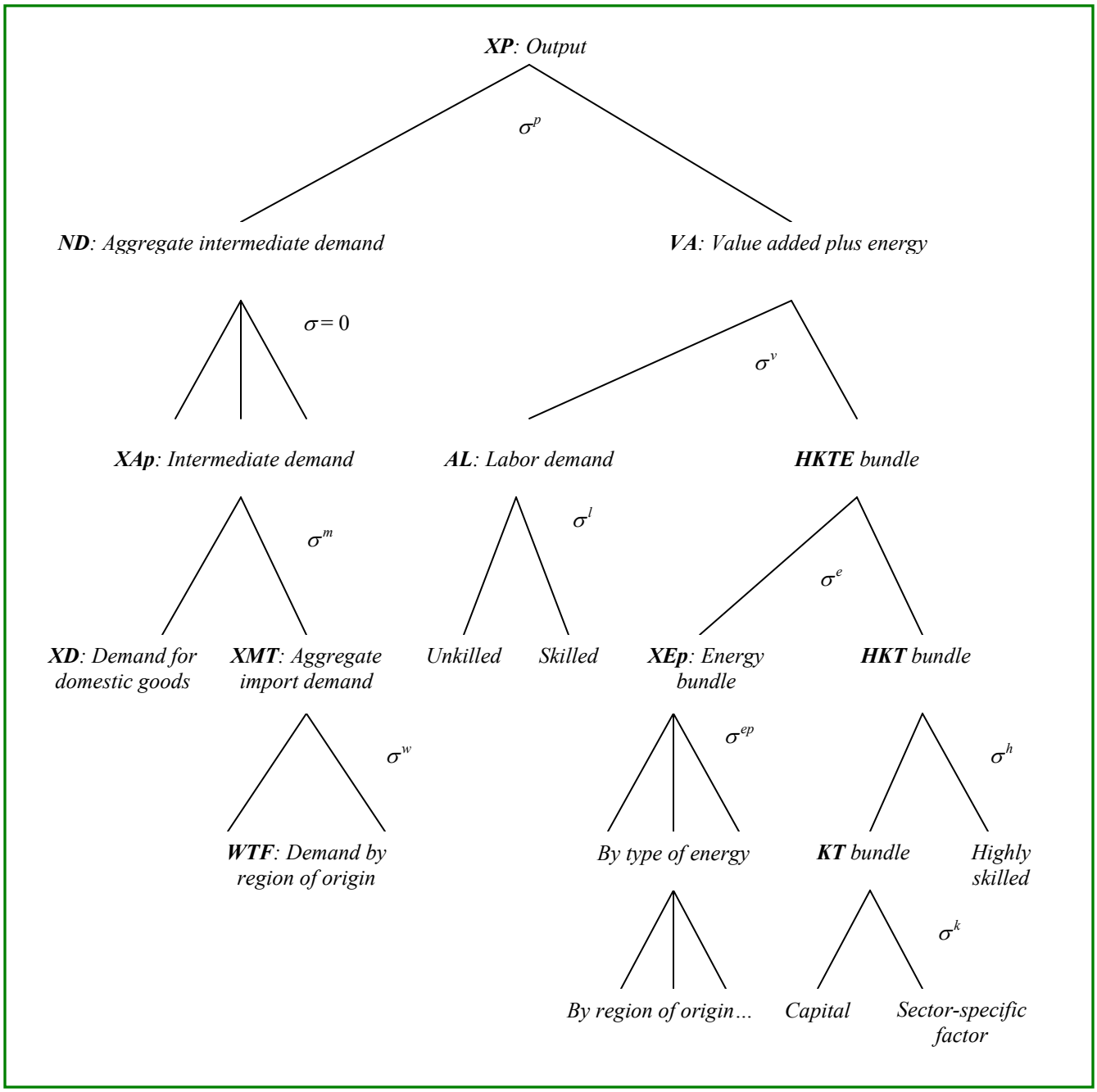
parameter, under the assumption that some share of sectoral productivity is determined by openness, for example 40 percent.

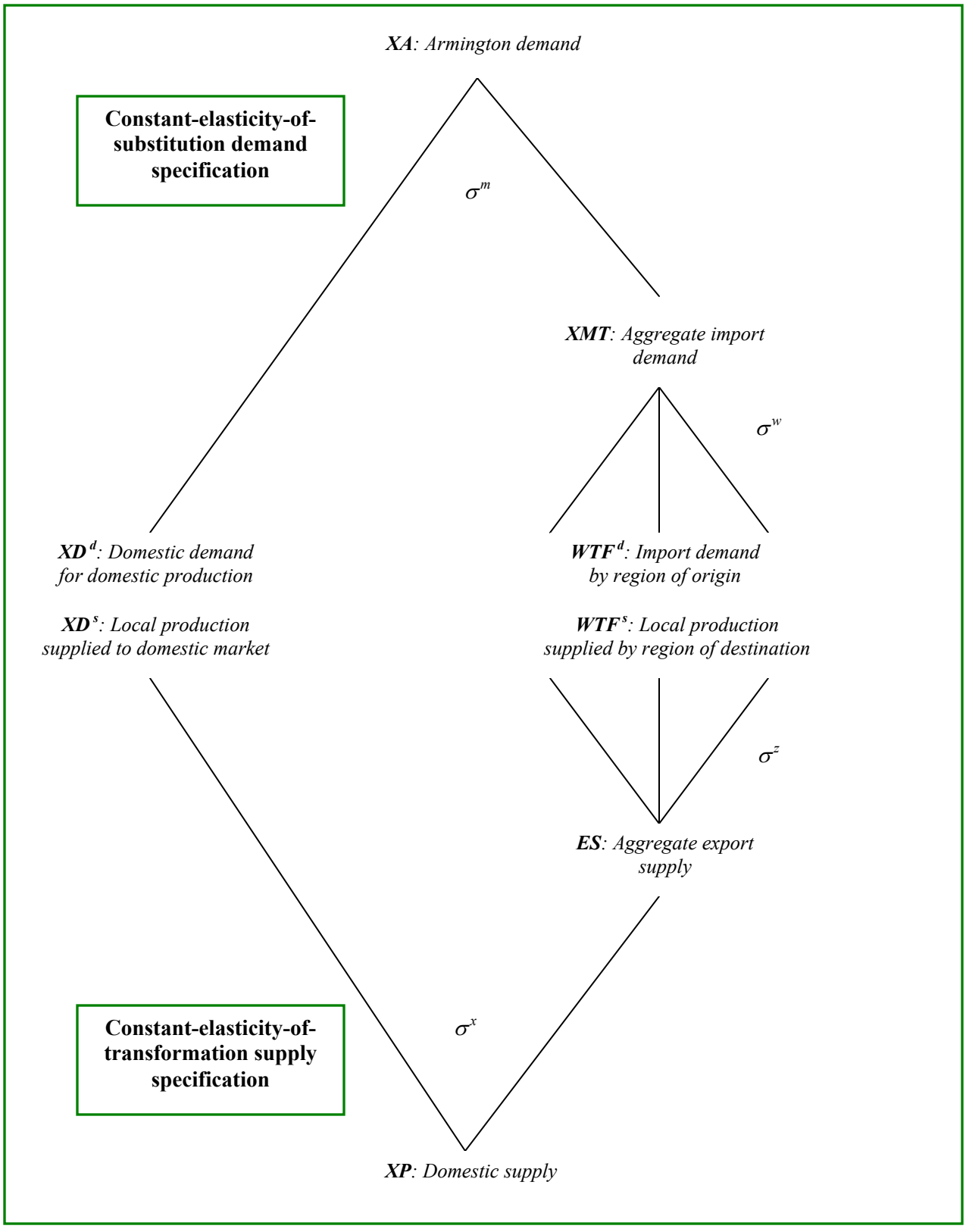
In policy simulations, the economy-wide productivity factor, along with other exogenous productivity factors (sector-specific shifters) are held fixed, but the openness-related part of productivity is endogenous and responds to changes in the sectoral export-to-output ratio. In the manufacturing and services sectors, the elasticity is set at 1. In the agricultural sectors it is set to 0.5.

Say sectoral productivity is 2.5 percent, and that 40 percent of it can be explained by openness, i.e. 1.0 percent, with the residual 1.5 percent explained by other factors. Assume sectoral openness increases by 10 percent. If the elasticity is 1, this implies that the openness-related productivity component will increase to 1.1 percent and total sectoral productivity will increase to 2.6 percent (implying that the total sectoral productivity increases by 4 percent with respect to the 10 percent increase in sectoral openness).


XP: Output
σ^p
ND: Aggregate intermediate demand
VA: Value added plus energy and fertilizer
$\sigma = 0$
XAp: Intermediate demand
AL: Labor demand
HKTEF bundle
σ^m
σ^l
σ^f
XMT: Aggregate import demand
XD: Demand for domestic goods
Unskilled
Skilled
HKTE bundle
Fertilizer
σ^w
σ^e
σ^{ft}
Demand by region of origin…
XEp: Energy bundle
HKT bundle
By type of fertilizer and region of origin
σ^{ep}
σ^h
By type of energy
Highly skilled
KT bundle
σ^k
By region of origin…
Land
Capital


XP: Output
σ p
ND: Aggregate intermediate demand
VA: Value added plus energy and feed
σ = 0
σ = 0
XAp: Intermediate demand
KTEL bundle
TFD: Land and feed bundle
σ m
σ v
σ f
XD: Demand for domestic goods
XMT: Aggregate import demand
AL: Labor demand
HKTE bundle
Feed
Land
σ w
σ l
σ e
σ fd
WTF: Demand by region of origin
Unskilled
Skilled
XEp: Energy bundle
HKT bundle
Feed demand by type of feed and region of origin
σ ep
σ h
Energy demand by type of energy and region of origin
Capital
Highly skilled


XP: Output
σp
ND: Aggregate intermediate demand
VA: Value added plus energy
σ = 0
σv
XAp: Intermediate demand
AL: Labor demand
HKTE bundle
σm
σl
σe
XD: Demand for domestic goods
XMT: Aggregate import demand
Unkilled
Skilled
XEp: Energy bundle
HKT bundle
σw
σep
σh
WTF: Demand by region of origin
By type of energy
KT bundle
Highly skilled
σk
By region of origin…
Capital
Sector-specific factor


XA: Armington demand
Constant-elasticity-of-substitution demand specification
σ^m
XMT: Aggregate import demand
σ^w
XD^d: Domestic demand for domestic production
WTF^d: Import demand by region of origin
XD^s: Local production supplied to domestic market
WTF^s: Local production supplied by region of destination
σ^z
ES: Aggregate export supply
Constant-elasticity-of-transformation supply specification
σ^x
XP: Domestic supply