How Western Hemisphere Integration Affects the U.S. Economy in An Intertemporal Global Model

Xinshen Diao, University of Minnesota
Agapi Somwaru and Terri Raney, USDA/ERS

Selected Paper for the AAEA Meetings, Salt Lake City, 1998

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Regionalism is an integral part of the broader economic policy reforms that have occurred in the Western Hemisphere over the last decade. Beginning in the mid-1980s, many Latin American countries undertook comprehensive economic reform programs, including a fundamental shift from the “import-substitution” development policies of previous decades to more open, market-based policies. In the north, Canada and the United States also implemented policy reforms, particularly for agriculture, reducing government intervention in markets and liberalizing trade barriers. Regional trade agreements have been a key factor in advancing and consolidating the market-oriented reforms underway in the hemisphere. As a result of the policy reforms in the hemisphere, economic growth has accelerated, averaging 3.5 percent for Latin American countries in the 1990s compared with 1.1 percent during the decade of the 1980s. Total trade and agricultural trade have increased, particularly within the hemisphere. This paper examines the dynamic effects of regional integration agreements in the Western Hemisphere on U.S. agriculture and trade, taking into account the economic growth that has followed in the wake of opening in trade in the Americas.

1. The Dynamic Global General Equilibrium Model

The Western Hemisphere is a highly dynamic region in terms of its economic development and economic policy reforms. Hemisphere-wide integration is actually another step in a sequence of trade liberalization policies that many countries in the hemisphere have been pursuing. Hence, to analyze any possible effect of regional integration in the hemisphere on the U.S. economy, we
need to account for these dynamic factors, especially the close linkage between trade policy and economic growth. For this reason, we developed a global dynamic general equilibrium model. (For detailed description of the model, please see Diao and Somwaru, 1997.) The model is dynamic in the sense that economic agents, such as firms and households, have intertemporal optimization behavior. The model is global and, hence, covers all countries/regions in the world. As the focus of the study is in the Western Hemisphere, the major Western Hemisphere countries are included separately in the model while the rest of the world is treated as an aggregated region. The general equilibrium feature of the model further implies that resources can move among sectors, thereby ensuring that adjustments are consistent across sectors.

The potential dynamic impacts of alternative regional integration scenarios are captured by several economic indicators in this analysis. These indicators include the growth paths of real GDP, total consumption, agricultural factor income, total investment, total and agricultural trade (exports and imports), and changes in foreign capital inflows/outflows.

2. Dynamic Impact of Alternative Regional Integration Schemes on the United States

We conducted two alternative simulations for the regional integration arrangements of the Americas (RIAA). In the both scenarios, the full implementation of the NAFTA, MERCOSUR (including Chile), and Uruguay Round GATT/WTO agreements are included. Additionally, in the first scenario, a hemispheric-wide free trade agreement is modeled by eliminating all tariffs among the hemisphere countries except for the United States. Specifically, the Unites States only eliminates its import tariffs with the other two NAFTA member countries, while Canada and Mexico also joint the FTAA and eliminate tariffs with all other hemisphere countries. We call this scenario RIAA-1. In the second scenario, RIAA-2, the United States actively takes part in the hemisphere-wide free trade agreement.
The model is calibrated using the GTAP data base, version 3, which represents the world in 1992 (McDougall, 1997), and then is shocked by various policy scenarios. The outcomes of the simulations are reported in relative terms, i.e., a deviation from the base-year data. The initial levels of tariff rates for the countries/regions in the model are obtained from the same data base -- GTAP database. The tariff rates were weighted applied rates for each individual country/region in the database and the weights are 1992's import shares for the aggregate commodities of each country/region in the model. Within the Western Hemisphere in 1992 (the base year), average tariffs ranged from 13.5 percent for the United States to 35 percent for Brazil.

2.1. Effects on U.S. GDP, consumer welfare, and agricultural income

The significantly positive linkages between openness in trade and a country’s economic growth have been documented by many studies in the literature in terms of technological spillovers or positive externalities of trade which raise a country’s productivity (see, for example, Grossman and Helpman, 1991; Coe and Helpman, 1995; Coe, Helpman and Hoffmaister, 1997), as well as in terms of stimulated investment which enhances a country’s capital endowments. It is very important for the dynamic model to capture such linkages, especially when most of the countries in the hemisphere are developing countries that are catching up with the developed countries, such as the United States and Canada. In the model, the full implementation of existing regional integration agreements (NAFTA and MERCOSUR) and of the Uruguay Round GATT/WTO agreement, together with a hemispheric-wide integration stimulate hemisphere country’s productivity growth as well as capital investment. These allow all hemisphere countries to enjoy more rapid growth measured by real GDP and agricultural income.

In comparison with developing countries in the hemisphere, the gains for the U.S.
economy measured by growth in GDP are relatively small, regardless whether the United States joins the FTAA (see Figure 1). As we know that gains from trade liberalization are mainly generated from three sources: more efficient allocation of existing resources, increases in capital investment, and improvement in a country’s factor productivity. Because the U.S. is a highly developed country with relatively low levels of trade distortion, we cannot expect large gains for the U.S. economy in terms of GDP changes generated directly from U.S. own trade liberalization, or from trade liberalization in the other hemisphere countries.

On the other hand, as most of developing countries in the hemisphere are along with their economic transition processes, eliminating trade barriers and liberalizing capital markets, the hemisphere-wide integration will allow these countries to further integrate their economies with the more advanced economies (the United States and Canada) by increasing trade and capital flows with U.S. or Canada. Thus, it is more likely for the developing countries to capture the technological spillovers embodied in the trade or capital flows from the U.S. or Canada. The simulation outcome of the model captures such possibilities. For instance, under the two scenarios, Mexico and Chile would enjoy a two-digit increase in their GDP levels from the base while the growth in Argentina’s and Brazil’s GDP would exceed 6 percent, regardless whether U.S. joins the FTAA (Figures 2 - 4).

Deviations on U.S. GDP growth are observed under the two alternative scenarios -- RIAA-1 vs. RIAA-2, but are nevertheless small. That is, under the RIAA-2, the United States would benefit more than under the RIAA-1, in which U.S. is an outsider of the FTAA, but the gap is small (Figure 1).

Sources of economic growth include both capital investment and productivity growth.
Deviations in the economic growth captured by changes in GDP under the two different integration scenarios reflect differences in capital investment that respond to trade policy changes, as well as productivity growth that responds to technological spillovers from advanced countries and embodied in trade. The investment responses in each country are endogenously determined in the model by firms’ choices when they maximize their intertemporal profits, while technological spillovers embodied in trade and hence the productivity growth are modeled using the results from econometric estimation in the literature. The theoretical framework of our model is the neoclassical exogenous growth theory, in which technological changes are exogenous. However, according to the findings of many econometric studies in the literature, a country’s factor productivity growth, given all other influencing factors, depends on changes in the ratio of the value of the country’s trade to the value of its GDP (Coe and Helpman, 1995; Coe, Helpman and Hoffmaister, 1997). If a country trades more with other countries as a result of adopting an open trade policy, and imports more capital goods from advanced countries, the possibility for the country to learn from or to absorb the more advanced technological knowledge from other countries, especially from the developed economies, would increase. Such technological spillovers would help a country to improve its total factor productivity (TFP) and hence the economy would grow more rapidly.

By choosing a relatively large “spillover elasticity” for the Western Hemisphere developing countries, such as Mexico and Brazil, and a small elasticity for the United States and Canada, the total factor productivity in the developing countries is allowed to improve more than that in the United States and Canada under the same scenario. The spillover elasticity is defined as the response of a country’s TFP (total factor productivity) to the change in the country’s
openness in trade, i.e., the ratio of the country’s trade over GDP. In the model, the spillover
elasticity for the developing countries was chosen at a level such that a one percent increase in the
share of a country’s total trade in GDP is assumed to generate a 0.2 percent annual growth in the
country’s TFP during the early years (first 15 years) of the time horizon. For the United States
and Canada, a one percent increase in the ratio of total trade to GDP is assumed to raise the TFP
levels by less than 0.01 percent annually in the same time period.

For developing countries in the hemisphere, the contributions of the improvement in their
TFP and capital investment due to regional integration are equally important for their economic
growth. In contrast, for the United States, regional integration’s impacts on growth are mainly
captured by increases in capital investment. Under the two alternative RIAA scenarios, the U.S.
total capital stock increases about 0.7 and 1.4 percent, respectively, while the level of U.S. TFP
improves by 0.25 and 0.5 percent in total, respectively, with the ratio of trade over GDP in the
U.S. raised only by 1.8 and 3.2 percent.

Increased investment opportunities in the developing countries in the hemisphere cannot
be fully financed by their domestic savings. International capital markets will be an important
source to finance their rapid growth in investment. This would create an opportunity for U.S. to
invest abroad, either via international lending or direct foreign investment. Such indirect effects
on the U.S. economy, i.e., the effects generated by the growing demand for U.S. financial capital
from abroad, may be stronger than the direct effects, such as the increased investment in the
domestic markets within U.S.. In the both scenarios, we observe that foreign capital flow into the
developing countries in the hemisphere following the RIAA. For most of these countries, e.g.,
Mexico and Argentina, there is no significant difference in their demand for foreign capital under
the alternative RIAA scenarios, while for Brazil, Chile and OWH (including all other south American countries except for the members of MERCOSUR), investment and, hence, demand for foreign capital inflow increase more when the United States joins the FTAA. Demand for foreign capital by these countries creates opportunities for U.S. firms to invest abroad, as economic adjustments in the other hemisphere countries are more drastic given their relatively high levels of import tariffs and low levels of economic development. In total, the foreign assets owned by U.S. private sectors rise by 9 and 13 percent, respectively, under the two scenarios. However, the model cannot distinguish foreign direct investment from foreign lending or the destination of foreign investment for each individual country. The relatively large deviation in U.S. foreign assets holdings between RIAA-1 and RIAA-2 implies that the key economic indicators to measure the importance of the FTAA for U.S. economy should include its indirect effect generated from the growing foreign demand for the U.S. financial capital, which is in abundant for a wealthy country. With rapid economy growth in the hemisphere developing economies due to RIAA, increase in the demand for U.S. financial capital are expected to be strong, and this should become a major consideration for the U.S. in further developing closer economic linkage with its neighbor countries in the hemisphere.

Economic growth implies higher incomes for consumers and, hence, growth in their consumption. Under the both scenarios and in the entire time period, the path of changes in a country’s overall consumption is almost the same as the path for its GDP growth. This implies, given that all hemisphere countries’ consumers benefit from the RIAA, that benefits for U.S. consumers are modest, in terms of changes in their overall consumption. Thus, the gap between the two growth paths of U.S. consumers’ total consumption, caused by depending on whether the
United States joins the FTAA, is also quite small.

Similar to changes in GDP and total consumption, U.S. farm income (i.e., income from capital and labor used in the agricultural and agriculturally related sectors), also shows modest growth under both scenarios, with a percent increase in total. The difference in the increase in U.S. farm income under the two alternative RIAA scenarios, is quite small, being less than 0.5 percent. The major effects of the alternative RIAAs on U.S. farm income originate from more efficient use of current resources, including the creation of more job opportunities in the agricultural and agriculturally related sectors, instead of increased investment. This is captured by the short-run effects on U.S. farm income, i.e., under the two alternative RIAA scenarios and among the one percent increase in the U.S. farm income, about one-third comes from increased agricultural and agriculturally-related labor employment in the first 3 - 5 years. After that, additional annual increase in U.S. farm income are negligible. This indicates that as the United States has a comparative advantage in agriculture, resources would be used more efficiently in the agriculture, if U.S. joins the FTAA, and this would become a major source of an increase in U.S. farm income. However, many other hemisphere countries also have a comparative advantage in agriculture. They may become competitors for U.S. agricultural products, once they catch up with the advanced technology that the U.S. agricultural sector exhibits. Thus, in the long-run, the competitiveness of U.S. agricultural sector may be challenged by its neighbor countries in the hemisphere, which is captured by the model results as relatively stagnant growth in U.S. farm income in the long-run, compared with that in the short-run.

2.2. Effects on U.S. total and agricultural trade

As expected, the effect of regional integration on trade flows is larger than that on the
economy-wide indicators, such as GDP and total consumption. The reason is obvious, as integration will re-enforce the economic linkages among the countries in the region and cause increases in their trade. Compared with the base, U.S. total exports and imports would increase by about 3 and 2.6 percent, respectively, in the RIAA-1, and 5.6 and 5 percent, respectively in the RIAA-2. Deviations in U.S. exports and imports between the alternative RIAA scenarios are more significant than those for U.S. GDP. That is, if the United States joins the FTAA, U.S. exporters can enjoy an additional 2.6 percent increase in exports and U.S. consumers can enjoy a 2.4 percent increase in imports than if U.S. stays outside of the FTAA. As total exports grow more rapidly than total imports in both scenarios, U.S. trade deficits would become smaller.

In relative terms, more rapid growth in U.S. agricultural exports and imports is observed under both scenarios. Compared with the base, U.S. agricultural exports and imports would increase by about 6 and 3.2 percent, respectively, in RIAA-1, and 7.9 and 6.5 percent, respectively in RIAA-2. This would raise U.S. agricultural export share by one percentage point (from 8.6 to 9.6 percent of the U.S. total merchandise trade) if the United States joins the FTAA, but by only a 0.1 percentage point if the United States is an outsider. With relatively high tariffs on agricultural imports within the hemisphere, agricultural trade has suffered more than other trade before the regional trade reforms took place. Once tariffs are eliminated or reduced, it is intuitive to observe that, the higher the import barriers on a specific sector, the faster this sector’s trade grows.

We notice that U.S. agricultural exports would increase more in the short and medium-run (the first 15 years), compared with the long-run (the first 20 - 30 years). That is, gains in U.S. agricultural exports observed in the short or medium run, might cease in the long-run. Under the
RIAA-2 scenario, for example, U.S. agricultural exports reach their highest level during the first 15 years. After that, U.S. agricultural exports would fall slightly (1 - 1.5 percent) in the following 5 - 20 years, compared with the highest level in the early period.

For the Western Hemisphere developing economies, gains due to the RIAA would be generated from efficient use of resources, stimulated investment, as well as improvement in TFP. Furthermore, the developing hemisphere countries, such as Argentina, Brazil and other South American countries, with their agricultural comparative advantage, would compete with the United States in third country markets as they retain their growth in agricultural exports in the long-run. Such competition actually would be stronger if the United States joins the FTAA than that if not, since closer economic linkages with the United States would allow those countries to benefit more from U.S. advanced agricultural technology.

Given the competition between the agricultural exports of the U.S. and other hemisphere countries in third country markets, agricultural trade between United States and its hemisphere neighbors actually would significantly increase if the United States joins an FTAA (about 8 percent of increase). In addition, relatively rapid growth creates more trade opportunities for U.S. exporters in the hemisphere and the United States continuously increases its agricultural exports to the other hemisphere countries in the long-run.

3. Summary and Conclusions

The West Hemisphere-wide economic integration can be viewed as another step in a sequence of trade liberalization policies that most hemisphere countries have being pursuing in the last decade. Countries within the hemisphere will continuously enjoy the gains from a more open hemisphere economy, including the United States, no matter whether the United States joins the
future hemisphere-wide integration.

Taking into account the close linkage between open trade and economic growth, the hemisphere countries which are in the process of giving up their inward-oriented development policy and turning to more open economic policies would benefit most from further hemisphere-wide integration. Since many of these countries have a comparative advantage in agriculture similar as the United States and Canada, the competition from these countries for U.S. agricultural exports would rise in the long-run. The competition will mainly take place in third country markets, while trade between the United States and its hemisphere neighbors would increase if the United States joins the FTAA.

The direct effects of whether the United States joins the FTAA are modest, given the United States is a much advanced and open economy in the hemisphere. Furthermore, the gap between the gains from the United States joining the FTAA or not is not large in terms of the FTAA’s direct effects on the U.S. economy. However, indirect effects on the U.S. economy, mainly the effects on the foreign demand for U.S. investment abroad or U.S. capital outflow to neighboring countries, are much stronger than that of the direct effects on the U.S. domestic economy. In addition, the gap between the gains from whether the United States joins the FTAA is significantly wider once the indirect effects are included. Hence, for the United States in determining whether to actively join a hemisphere-wide integration agreement, the long-run indirect effects of a FTAA, i.e., a closer economic relationship between the United States and its neighboring economies, beyond the trade relationship, should be taken into account.
References


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Statement of Principles, FTAA Trade Ministerial, Belo Horizante, Brazil, September 1996.


Deviations from Base GDP in Selected Western Hemisphere Countries
(The base GDP is normalized to one. Note different scale for U.S.)

USA

Mexico

Argentina

Brazil

RIAA-1
RIAA-2