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Intra-Regional vs Extra-Regional Trade Liberalization in Central America

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Abstract

Although the State Members of the Central American Integration System (henceforth SICA[2]) trade very extensively with the USA, the current growth of their intra-regional exports is remarkable and prone to create more internal added value for the region. We use and compare a standard, perfectly competitive and an imperfectly competitive GTAP[3] CGE model based on the GTAP 9 database, to assess the impact of different scenarios. Our simulations evaluate the elimination of the existing taxes and subsidies in 2011, both at intra-regional level and with USA. The results emphasize the preference by most of the SICA countries for the completion of the customs union, as opposed to the deepening of the current DR-CAFTA[4] agreements.

Keywords: GTAP; Applied general equilibrium; Free Trade Agreements (FTAs); Central America.

JEL Codes: C68, D58.

[1] Senior authorship is not assigned.
[2] Acronym in Spanish from "Sistema de la Integración Centroamericana".
[3] Acronym from Global Trade Analysis Project, which is administered by the Center for Global Trade Analysis, Purdue University.
[4] Dominican Republic-Central America Free Trade Agreement.

1. INTRODUCTION

During the recent economic crisis, the global economic scenario has been affected by a decline in the multilateral trade liberalization; the proliferation of regional solutions and the apparent exhaustion of North-South trade opportunities. A lack of conclusive evidence on the welfare benefits from multilateral liberalizations, together with the associated rises in income inequality (Finley Brook 2012), have reopened the discussion on the true origins of the trade-induced economic growth: the exposure to the global markets or the development of the different regional markets (Rodrik 2011).

In the Central American context, certain analysis by Durán Lima et al 2011), Ocampo (2012) or Cordero (2014) emphasize the increasing relevance of the intra-regional trade for SICA countries. Even for Latin America as a whole, it appears that the products with higher technological content are especially important in the intra-regional exports. Therefore, the initiatives framed within the label of regionalism have gained prominence in the recent years, which calls for a joint evaluation of the effects on Central America of both the intra-regional and the extra-regional trade liberalization. The latter will be mainly represented here by a deepening of the existing DR-CAFTA agreements with the USA.

Our objective is then exploring the presumable sectoral effects of the main integration processes that jointly affect the SICA region today. Another area of interest concerns their welfare consequences for the local population in Central America. We will denote by "Internal Liberalization" the reduction in import taxes[5] and export subsidies within the SICA region, whereas the liberalization between the USA and the SICA area will be denoted by "External Liberalization".

SICA is one of the oldest initiatives in Latin American regionalism since the signature in 1960 of the General Treaty of Economic Integration and the creation of the Central American Common Market (CACM). After the regional conflicts in the 1980s, integration was a key variable in the Peace Agreements, which were focused on the commitment for peace, democracy and development. Although the new SICA structure was created with a multidimensional approach, economic integration was still a very relevant component. Finally, Belize and the Dominican Republic joined SICA in 2000 and 2013, respectively.

These Central American countries have also applied measures to attract FDI in order to strengthen their export capacity. Nevertheless, they maintained the customs union project when SICA came up to a renewal in the early 1990s. To sum up, Central America has today an imperfect customs union based on the following conditions:

a) It was initially formed in the 1960s by Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica.
b) Panama joined the customs union in 2013, and is gradually adopting the legal framework associated to economic agreements.
c) There are only two multilateral exceptions to free intra-regional trade (unroasted coffee and sugar cane) and few bilateral restrictions among specific countries. However, this form of trade is limited by some unilateral measures; several safeguard clauses and other non-tariff barriers, which are especially prevalent in the case of

[5] The GTAP 9 database groups both tariffs and especial barriers under the label of ad-valorem import taxes.

Costa Rica. In addition, Panama is gradually joining Customs Union agreements and its tariff barriers with other Central American countries are still very important.

d) The Central American countries have developed a comprehensive common policy on safeguard measures, origin of goods, unfair practices, transit of goods, sanitary and phytosanitary measures, non-tariff barriers, trade disputes, customs administration, regional transport and other matters.
e) A common external tariff covers the whole tariff universe, except for 4% of the items still under negotiation. This created some disharmony given the relevance of these exceptions in terms of taxes. The external tariff is experiencing separate negotiations, which do not grant community tariff preferences and, in practice, reduce the effectiveness of the customs union and its legitimacy among producers and entrepreneurs.

Only five of the trade agreements of Central American countries are regional (Chile, United States, Mexico, Dominican Republic and the European Union). The rest have been negotiated bilaterally by one or more countries. The map on regional and bilateral agreements creates a confuse outlook of external trade in the SICA region. Nevertheless, even with this complex map of trade agreements, the share of intra-regional trade within SICA is the highest in the Latin American regionalism processes.

CACM countries represent the second largest partner for the region itself (32.7% of exports and 18% of imports in 2015). The first partner is United States (33.2% of exports and 34.23% of imports in 2015). The EU is the third largest export destination, but only the fifth market of origin of imports. China and Mexico are also two important countries for the Central American imports (11% and 8.23% in 2015). Exports to China were only 1.23% in 2015, but imports are growing significantly every year.

Under all circumstances, Central American countries have always considered external trade negotiations a priority in their economic policy agenda. Since the United States has always been their main historical trade partner, Central American countries and the USA culminated in 2004-2005 the signature of the DR-CAFTA (see e.g. Sánchez (2007)). The DR-CAFTA (Dominican Republic-Central America Free Trade Agreement) is a treaty that creates a free trade zone between the signatory countries. It came into force at different dates for each country since 2006.

It is then relevant to confront the impact on welfare of intra-regional and extra-regional agreements, since the recent public development strategies of Central American countries focused more on the promotion of free trade with the main trade partners, rather than intra-regional agreements. Despite the important share of intra-regional trade, the political interest of Central American governments focused on the DR-CAFTA negotiations (2002-2006) and the European Union and the Central America Association Agreement (2007-2012). However, the academic literature on the impact analysis of these trade agreements is neither wide nor conclusive, since some of them applied only for a few years. Nevertheless, although the Central American countries face big challenges of modernization and competitiveness, the development of a network of agreements with third countries seems finished, except for the case of China.

Therefore, the academic and political debate concerning the SICA agreements on economic integration is open. Due to the above-mentioned priority of free trade

agreements with third countries, the full development of the customs union agreements and their development agenda is still pending. Which are the questions that are still undeveloped or non-negotiated?

a) Exceptions to free intra-regional trade. The general principle is that those goods excluded from the free trade regimes are subject to the payment of a Most Favored Nation (henceforth MFN) tariff, like any other import from the rest of the world.
b) There are many products still affected by the tariffs still applied by Costa Rica to its regional partners.
c) Trade between Panama and the rest of the Central American countries is still ruled by previous free trade agreements, as long as the incorporation of Panama to the Customs Union is still unfinished.

Let us also mention that intra-regional trade can have offsetting effects on the dependence of the US economy, especially during times of crisis. In addition, the composition of intra-regional trade could be substantially different from the content of extra-regional trade. A wider implication of sectors and the importance of industrial and agro-industrial linkages are the main arguments in favor of a bigger added value from the intra-regional trade.

The question is whether the decision to prioritize agreements with third parties (especially DR-CAFTA) against the agreements associated with the Customs Union was correct or not. We wonder whether it would be better on efficiency grounds to subordinate agreements with third parties to finish the intra-regional negotiations. Our main purpose, then, is the exploration of the potential impact of an intra-regional liberalization, in order to encourage or not the completion of the Customs Union, providing a coherent connection with external trade agreements. These development strategies could be very significant, and of particular interest for the governments in the region.

This paper also pays especial attention to the maquila sector. Although this sector in Central America dates back only to the late 1980s, it has become rapidly a leading export for every Central American country except for Costa Rica (Jansen et al 2007). However, after the expiration of the Agreement on Textiles and Clothing (ATC) in 2005, the strong competitive pressure from China, Hong Kong, Bangladesh and other Asian countries has forced this Central American sector to search for market niches and exploit the proximity to the US market to integrate the production processes.[6]

In this context, a number of empirical studies have tried to shed light on the expected consequences of the recent trade agreements for the Central American productive structure. Most of the applied-general-equilibrium literature focused on the impact on the US economy and did not disaggregate by country at the Central American level (Hilaire and Yang 2003 or Brown, Kiyota and Stern (2005)). As exceptions, Rutherford and Martínez (2000) and Francois, Rivera and Rojas-Romagosa (2008) put the focus on the Central American region, though only Costa Rica received a particular attention at the country level. Their results anticipated some of our final conclusions, but their analysis

[6] See e.g. Jansen et al. (2007) for a detailed description of the productive process and value chain in the Textile and Wearing and Apparel industries, which are the most prominent in the maquila sector.

was centered on the DR-CAFTA negotiations[7], without an explicit comparison between the Internal and the External liberalizations.

Our main intention is then addressing explicitly the convenience of certain North-South trade relationships versus other South-South integration processes. As analyzed by Schiff and Wang (2010), North-South trade relationships involve a higher R&D content of the Southern imports, which tends to increase learning at the industry level and future TFP in the Southern countries. Our analysis is static and confined to a shorter time horizon. However, it aims to emphasize the effects of a higher (Internal or External) trade freeness on welfare and inter-sectoral factor reallocations.

Although our CGE model is static and does not intend to address issues of intertemporal investment and capital accumulation with perfect foresight, it is still important to discuss the convenience of these assumptions. Pham et al (2017) built recently a comprehensive regional and intertemporal GTAP model, in which dynamic optimization on the part of both consumers and investing firms was explicitly incorporated. Therefore, they could introduce a gradual process of trade liberalization with sequentially decreasing trade barriers that were anticipated by firms from the initial period. As a result, they observed that Vietnam would benefit substantially from the Trans-Pacific Partnership process, concentrating most of its gains within the first ten years of liberalization. Our approach, instead, does not want to abandon a short-run focus, partially because the current uncertainty regarding the timing of internal and external trade liberalization in Central America hardly justifies a perfect foresight assumption, especially if we consider the widespread obstacles imposed today to the extension of many free trade agreements.

The second section of the paper deals with the main features of our GTAP 9 database and the two different CGE models we use. Section 3 presents the simulation scenarios with the subsequent results. Section 4 deals with the key drivers and the logical intuition for the results. Finally, Section 5 concludes.

2. METHODOLOGY: MODELS AND DATABASE

2.1. Database and Common Features of our Two Models

Two global, comparative-static GTAP (Global Trade Analysis Project) computable general equilibrium models have been used and compared to evaluate the impact of our trade liberalization scenarios. The structure of every GTAP model consists of four main components: a) a database with information on social accounting matrices, taxes and trade flows, providing the necessary input information for the subsequent impact analysis; b) a mathematical model that mimics the workings of the world economy, integrated by equations linked to producers' cost minimization, consumers' utility maximization and market clearing conditions; c) macroeconomic closure conditions, which differentiate between endogenous and exogenous variables; and d) data on elasticities of substitution among primary factors, between domestic and imported goods and between imports from different geographical sources.

In particular, the plausibility of the assumption that imperfectly competitive firms interact oligopolistically has received support in the literature, especially regarding the market

[7] A previous article by Hinojosa-Ojeda et al (1999) referred to the Central American republics, although they were trying to evaluate the impact of the North American Free Trade Agreement (NAFTA).

structures in less developed countries (Rodrik 1988) or Jensen and Madan 2004). Judging by the high firm concentration ratios, trade policy analysis in developing countries should take market power and scale economies into significant consideration. Therefore, we have decided to incorporate two different, comparable modelling specifications to our comparative-static exercise: the standard, perfectly-competitive GTAP model version 6.0 (Hertel, McDougall and Itakura 2001)) and a monopolistically competitive GTAP model along the lines of Swaminathan and Hertel (1996). In this respect, we wanted to check the robustness of our results with respect to the different market structure conditions, addressing the criticism to the usual CGE practice put forward, among others, by Mitra-Khan (2008).

Although each of our models treat differently the market structures, both of them share many features as multi-sector, multi-regional settings. These features could be summarized as follows:

In both cases, we adopt the fiction of a representative agent, either a regional household or a regional firm. The household (industry) sector then consists of infinitely many identical and infinitesimal households (firms). This implies that our models do not differentiate between rural and urban consumers. Furthermore, these models do not incorporate multiple international currencies and the GTAP Data Base is always expressed in millions of base year US dollars. Our base year will be 2011, since all our bilateral trade data correspond to that particular year.

The input-output structure of these models provides a framework to differentiate between products (tradeable goods and services) and primary factors (endowment commodities, in the GTAP parlance) (Corong et al 2017). Only the former can be traded internationally, which prevents the consideration of inter-regional labor mobility. Another restriction is related to the choice of imports from different countries: all regional agents use the same mix of imports, although they are free to combine those imports with the domestic products. As acknowledged by Corong et al (2017), "the database does not reflect any concept of a government budget deficit"; since although it includes taxes and subsidies, this database lacks an extensive treatment of transfer payments or property income receipts.

However, GTAP models allow for the existence of trade deficits or surpluses, which give rise to financial capital inflows or outflows. Saving is treated as a good in the regional household system. This household allocates regional income between private consumption, government consumption and saving. In this regard, there exists a global market for investment funds that establishes the equality between global savings and global investment expenditures at the world level. The disbursement of global saving across regions to finance investment uses a particular allocation rule, related to the rate of return to investment. Finally, the end of period regional capital stock incorporates the initial stock, minus depreciation plus new investment.

Of course, the described common framework of the GTAP models is amenable to many modifications and extensions, some of which will try to reconcile it with new theories and will be used in this paper.

2.2. The Standard GTAP 6.0. Model

In the standard GTAP 6.0 model all agents are price takers. Apart from the typical price homogeneity that allows us to hold one price fixed (only relative prices matter), the assumption on constant returns to scale implies quantity homogeneity as well. In this model the Armington specification allows for an exogenous product differentiation, according to the country of origin of every good or service. That is the standard way to incorporate foreign trade to perfectly-competitive, computable general equilibrium models.

Naturally, the regional household maximizes its regional utility, which for the private demand system assumes a CDE (constant difference in elasticities) functional form. This particular utility function is non-homothetic. The closure rules consider that the local aggregate endowments are constant, though both capital and labor are perfectly mobile between sectors within the same region, until their returns are equalized locally.

2.3. Monopolistic Competition Introduced into the GTAP Model (Swaminathan and Hertel (1996))

Computable general equilibrium models have been very widely used to deal with issues of international trade liberalization. And although there is a tendency towards consensus regarding the main databases to be used, there is also a great variety of approaches concerning the behavioral modelling of economic agents. The range of oligopoly models (like Elbehri and Hertel (2006)) has expanded as well, though they require very precise information on the nature of strategic interaction between firms, which is rarely available. That is one reason why Chamberlin's monopolistic competition has been considered more frequently in CGE applications (see e.g. Harris (1984), Swaminathan and Hertel (1996), Francois (1998) or Roson (2006)).

Swaminathan and Hertel (1996) designed a model in which consumer preferences were heterogeneous: each individual had a most preferred product variety in each sector and consumed exactly one, along the lines of Anderson, de Palma and Thisse (1992). More specifically, the utility function exhibits "a quadratic penalty term for departures from the consumer's ideal variety". Therefore, the higher is the number of varieties available, the closer the consumer will be to his/her ideal, which leads to an apparent "love of variety" in the aggregate regional utility function.

The same property holds for firms, whose unit costs will be lower the higher is the number of differentiated intermediate inputs. In order to cater to the diverse needs of consumers, firms incur R&D and advertising costs, which are fixed, i.e. independent of their final sales. "With production occurring at constant returns to scale, this gives rise to declining average total costs", i.e. there are scale economies. The main differences between the monopolistically competitive sectors and the traditional sectors in the standard GTAP model are, then:

- Two new variables, which are the number of firms and the output per firm.
- Minimum expenditure and average variable costs are declining in the number of firms.
- Average total costs are also decreasing in output per firm.
- Foreign firms compete directly with domestic firms, that is, this model can do without the traditional, nested Armington specification.

Swaminathan and Hertel's setting also permits to combine perfectly and imperfectly competitive sectors within the same model. In this sense, we have tried to follow their recommendations as to "which are the industries (sectors) that are more appropriately modeled by a differentiated products approach": they propose to focus on those industries where important efforts to differentiate the products are evidenced by significant advertising / R&D expenditures. Finally, we have agreed to classify the sectoral market structures, separating perfectly competitive (p.c.) from imperfectly competitive (i.c.) sectors, as we indicate in the following subsection.

A final comment is due concerning the choice of closure rules in our treatment of Swaminathan and Hertel's model. As we mentioned above, our intention is characterizing the impact of the trade liberalization processes in the short run. Therefore, we have decided to keep the number of firms constant as an exogenous variable, allowing firms in certain sectors to incur losses, instead of profit gains, after the shock was introduced. As Mitra-Khan (2008) argued, "these decisions [on closure assumptions] have to be made at all levels in the model, and they are rarely, if ever discussed or justified in model papers. This would not be an issue, if the closure direction was neutral towards the result – this however is not the case". Then we have made our choice of closure conditions explicit and clear.

2.4. Regional and Sectoral Aggregations in both Models

A GTAP 9 database has been used, which originally comprises 140 regions, 57 productive sectors and 8 types of factor endowments. For the purpose of clarity in the interpretation of the results, we have chosen almost the same regional, sectoral and endowment aggregation as Francois, Rivera and Rojas-Romagosa (2008). Our choices are reflected on the charts (Table 1 and Table S1). In particular, we have defined just two labor categories (skilled and unskilled), together with land, capital and natural resources. According to our closure conditions, skilled and unskilled labor and capital are perfectly mobile between sectors, whereas land and natural resources are sluggishly mobile.

Table 1. Regional Aggregation

REGIONAL AGGREGATION
1. Rest of the World (ROW)
2. United States of America (USA)
3. China and Hong Kong (China)
4. European Union (EU-28)
5. Mexico
6. Costa Rica
7. Guatemala
8. Honduras
9. Nicaragua
10. Panama
11. El Salvador
12. Belize
13. Dominican Republic

3. SIMULATION SCENARIOS, RESULTS AND DISCUSSION

Our external-liberalization scenario includes the elimination of 100% of the ad-valorem import taxes and export subsidies between all SICA countries and the USA; the internal-liberalization scenario proceeds similarly only within the SICA region. All tradeable commodities will be affected by such reduction in trade barriers. Moreover, the total-liberalization scenario consists of the simultaneous application of the external and the internal liberalization (see Table 2). The result of the total-liberalization scenario does not need to be equal to the arithmetic sum of the impacts, given the non-linearity of the model.

Table 2. Description of the Scenarios

Different Scenarios	**Characteristics of the Shocks**
Internal Liberalization (Scenario 1)	Elimination of 100% of the existing ad-valorem import taxes and export subsidies within the SICA area.
External Liberalization (Scenario 2)	Bilateral elimination of 100% of the ad-valorem import taxes and export subsidies between the SICA countries and USA
Total Liberalization (Scenario 3)	Simultaneous application of the external and the internal liberalization

Still in 2011, our base year, there existed a substantial degree of Central American trade protection against US imports. On the other hand, with the exception of a few sectors like Sugar, Milk and Dairy or some varieties of Textiles, the North American foreign trade was much more liberalized with respect to imports from the SICA area, due to the previous existence of the Caribbean Basin Initiative. This fact implies that the USA has much more to gain in terms of productive accessibility to the regional markets. However, there exist sizeable export subsidies applied by the United States, especially in sectors like Mineral Products, Other Manufactures, Forest-Wood, Leather, Textile and Apparel. Therefore, their abolition would be very advantageous for some Central American economies, in particular for Panama and the Dominican Republic.

3.1. Scenario 1 under the Standard GTAP 6.0. Model

3.1.1. Overview

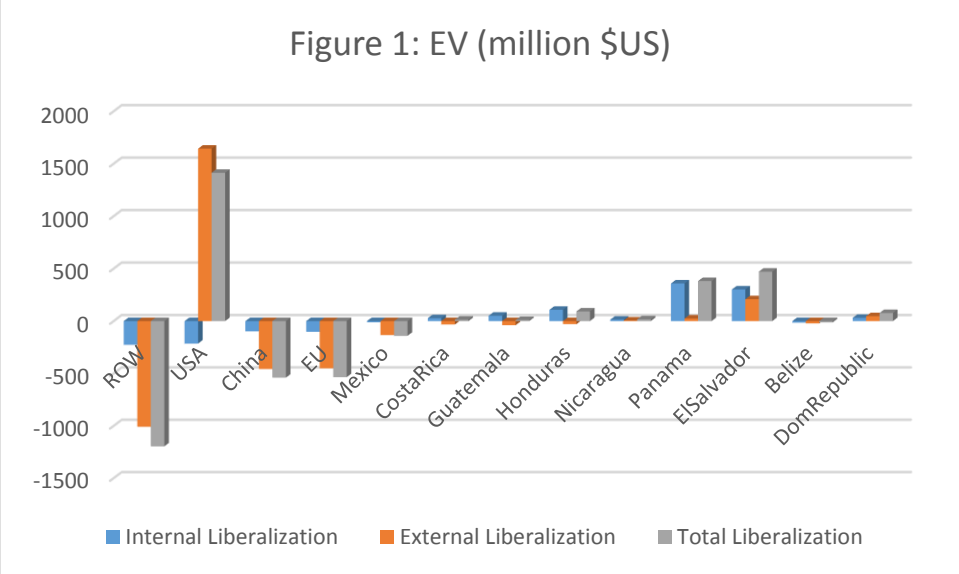
It is noticeable how Panama and Honduras will reinforce their position in Textiles and Wearing and Apparel, at the expense of El Salvador, since the latter country is much more dependent of its connection with the USA. All Central American countries, with the exception of the Dominican Republic, benefit more from Scenario 1 relative to our Scenario 2 in terms of the Equivalent Variation (EV)[8] (See Figures 1, 2 and 3). It is noticeable the great qualitative similarity of the welfare evaluation in the two models we consider, as will be specified below.

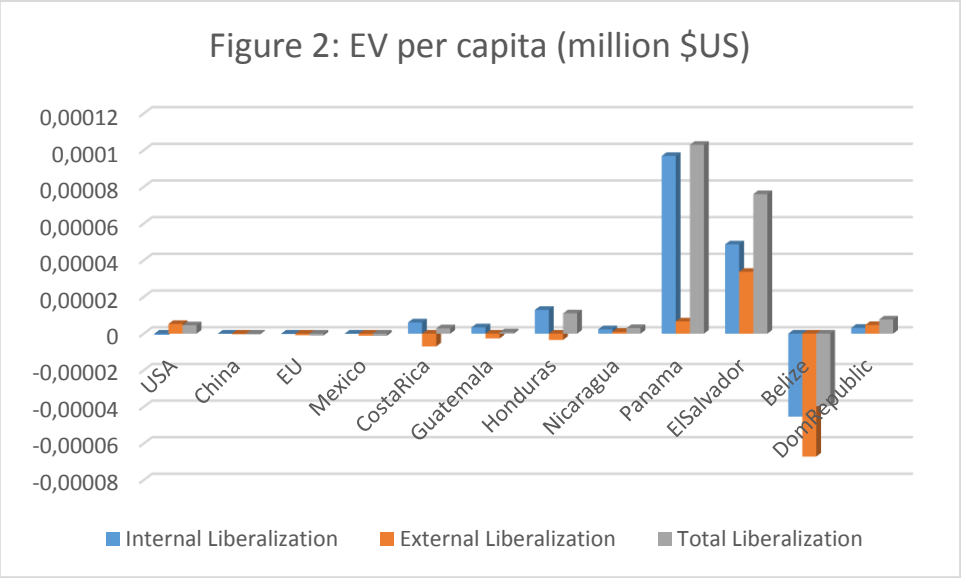
[8] Our experiments give rise to many variations in the endogenous variables of the CGE model, which induces a welfare impact on the regional households. The Equivalent Variation is a well-known monetary measure of the welfare changes, which is defined as the amount of income needed to attain the final utility level at the initial prices.

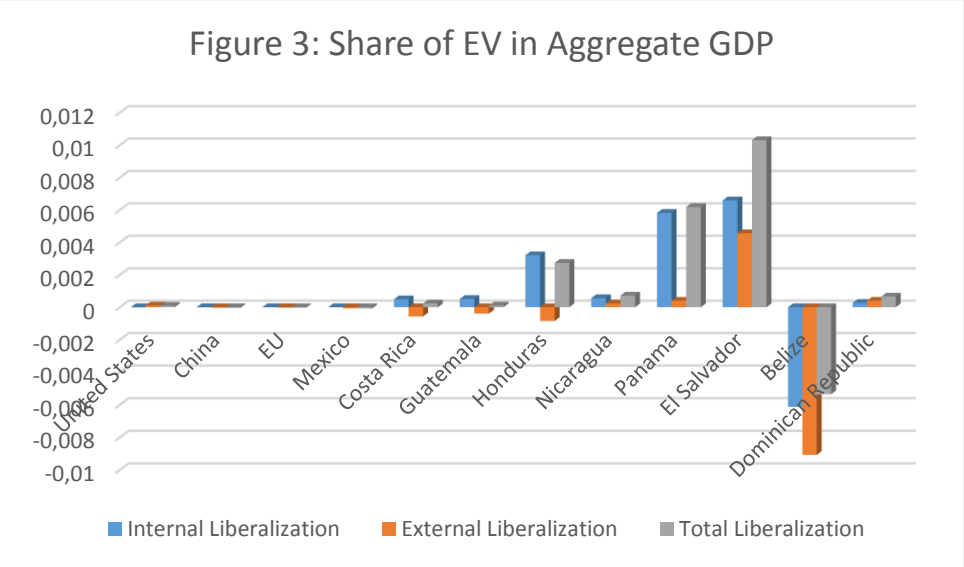
3.1.2. Domestic Production and International Trade

We can observe on Table S2 how Panama and El Salvador, the great winners from this Internal Liberalization, will strengthen their output position in the light manufacturing and the agro-industry sectors; like Leather, Beverages and Tobacco, Milk-Dairy or Meat. We will explore in our section 4 the causal explanations behind this phenomenon, which promotes the generation of more internal added value for the Central American region.

If the international trade specialization of these countries were mainly caused by comparative advantage, we would observe that some countries reduce and others increase their exports in the sectors mentioned above. However, we conclude that our Internal Liberalization leads to a stronger intra-industry trade within CA in many sectors, probably driven by the exchange of differentiated varieties. Moreover, Table S2 reveals that Sugar and Other Agriculture will generally contract its output in CA under the Scenario 1. That phenomenon will be completely reversed in our Scenario 2, as we will review in different subsections below. We believe such reversal is indicative of the different specialization patterns unleashed by our two liberalization scenarios.





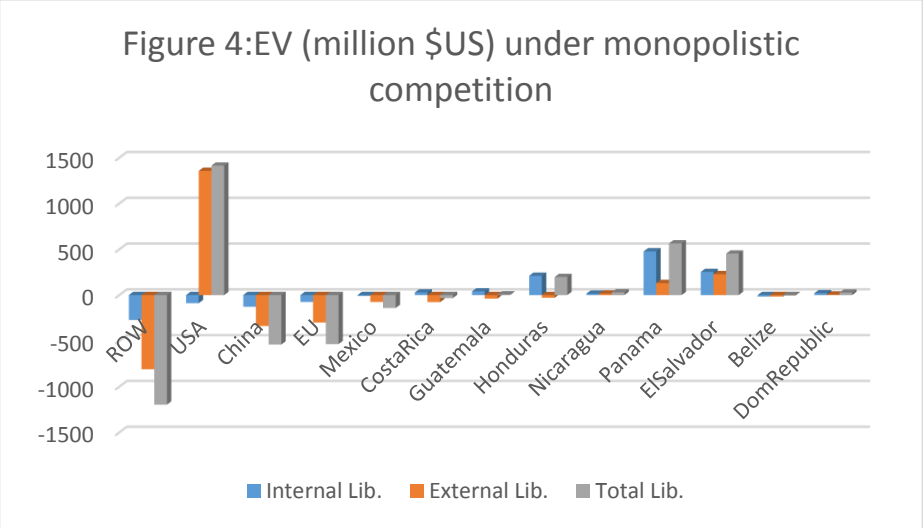


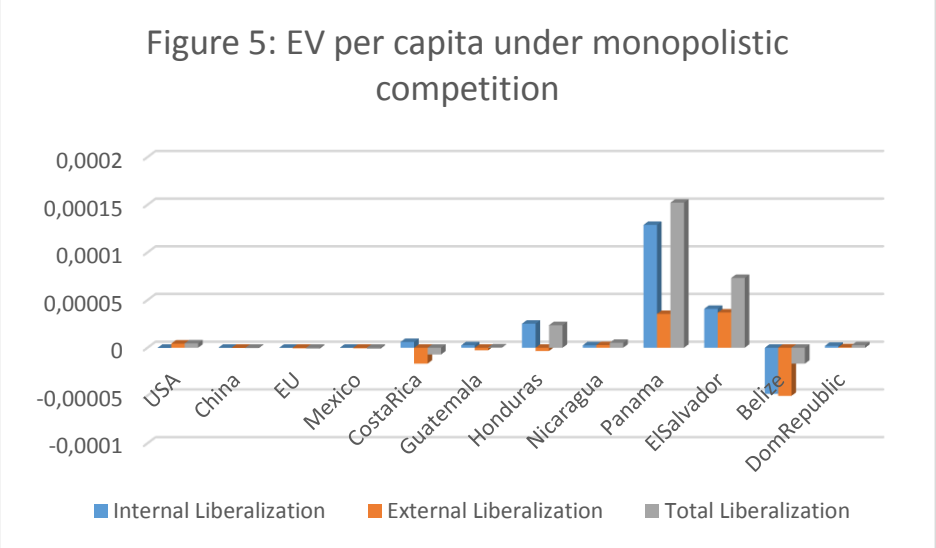
3.2. Scenario 1 under the Swaminathan and Hertel Model

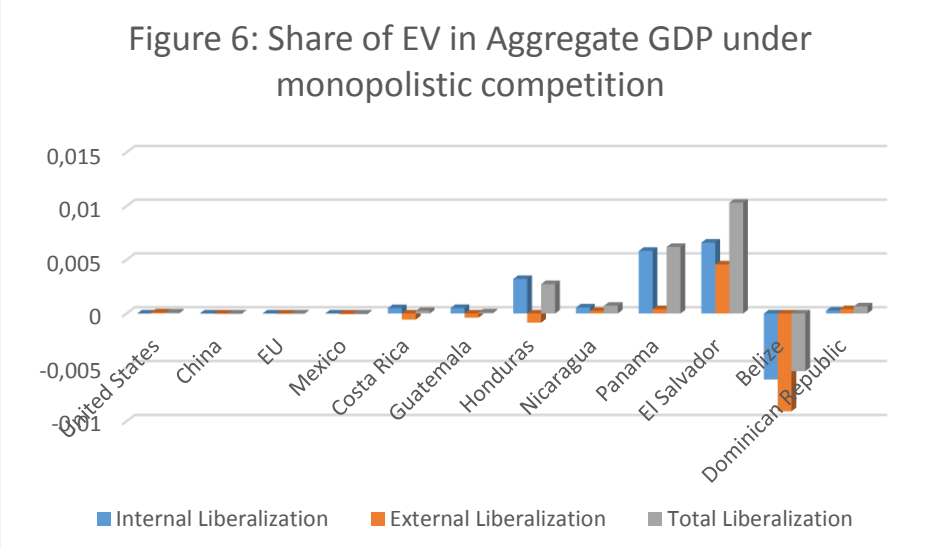
As we can observe by comparing Tables S2 and S3, the quantitative behavior of the monopolistic competition model in terms of output variations and welfare evaluations is really similar to the Standard GTAP 6.0. Model. If anything, the reallocations in product and factor markets are slightly more intense in Swaminathan and Hertel's model. That results in higher equivalent variations for the Central American countries. Panama is the most favored country in per capita terms with both forms of liberalization, which together add about $150 per person in our base year 2011 (see Figures 4, 5 and 6).

The particular case of Belize is especially remarkable, since this country experiences welfare reductions from trade liberalization under all scenarios. We can trace back the origin of this phenomenon, since we observed that its terms of trade worsen considerably as trade freeness increases. Therefore, cheaper imports increase the private household consumption but lower the internal output considerably in sectors

like Textile, Wearing and Leather. As a result, the regional household will have to decrease the government consumption and its purchases of the saving good.







3.3. Scenario 2 under the Standard GTAP 6.0. Model

3.3.1. Overview

It is important to notice that our Scenario 2 induces very strong product and factor market reallocations, given the magnitude of the US economy. This implies that the final effect of the Total Liberalization (our Scenario 3) will be more similar to Scenario 2 than to Scenario 1.

3.3.2. Domestic Production and International Trade

Firstly, under the External Liberalization scenario some sectors of the Central American agricultural production will suffer from an intense competition from the USA, especially regarding Rice, Meat and Other Cereal. This will induce some radical reallocations in favor of Sugar, Other Agriculture and Textiles that were absent in the Internal Liberalization scenario. They will also reduce the remuneration of the Land factor.

Secondly, the remarkable growth of Textiles and Fiber in El Salvador under the External Liberalization will take place at the expense of the rest of the economy (see Tables S4 and S5); in particular of the Meat, Milk and Dairy, Forest-Wood and Wearing and Apparel sectors. More specifically, the Salvadoran maquila structure will be specialized in the initial stages of garment production and will not manufacture the whole "package", which limits the creation of added value within Central America.

El Salvador will be the preferred location for the setup of the maquila-based Textile industry; partly because this country was especially open to the rest of the SICA area, which facilitates the access to the regional markets for the final goods. Moreover, unlike the case of Honduras, the Salvadoran maquila's value chain is especially dependent on imports and exports to the USA. However, the maquila-based Textile sector is hardly connected with the rest of the Central American economy and only 27% of its total output is added value; in contrast with Vegetables and Fruits or Minerals, whose share of added value is above 65%.

3.3. Scenario 2 under the Swaminathan and Hertel Model

On Table S5 we can again observe how our most significant results are robust with respect to the modelling choice.

Many of the sectors whose exports flourished under Scenario 1 (Milk and Dairy, Forest-Wood, Meat, Other Food, Leather) will clearly suffer from the External Liberalization. Simultaneously, Sugar, Fiber and Other Agriculture, which include mainly homogeneous goods, will be stimulated by a commercial specialization based on relative factor endowments. Finally, the Salvadoran Textile maquila and the Mineral Products in Panama will benefit from close trade relationships with the United States, which often exhibit weak backward linkages with the rest of the SICA sectoral structure.

3.4. Scenario 3 under both market structures

Logically, our Scenario 3 (Total Liberalization) captures a combination of the previous effects, in which the impact of the External Liberalization prevails in most of the countries and sectors. Tables S6 and S7 emphasize the robustness of our results with respect to the modelling approach.

The strong competitive pressure exerted by the US agro-industrial and manufacturing sectors tends to make Meat, Leather and Forest-Wood shrink almost generally in Central America. Meanwhile, Sugar and the Salvadoran Textile are the most favored local products. Only Panama seems to increase the diversification of its manufacturing basis, whereas the Honduran maquila conquers part of the North American market as well.

4. Key Drivers and Logic behind the Results

We can find significant theoretical work trying to elucidate the welfare gains and the incentives to join regional trade areas by poor and rich countries. Only in some cases did those models combine scale economies and different relative factor endowments, as in Spilimbergo and Stein (1998). They claimed that "joining a high-tariff country will enhance welfare more than joining a low-tariff country, other things being equal […]. Therefore, if rich countries have lower tariffs, the poor might choose to integrate among themselves".

In our particular case, the SICA area still keeps considerably high internal tariff and non-tariff barriers. Therefore, abolishing them within the Customs Union could generate more trade-creation benefits than trade-diversion losses, since the United States is relatively more open. However, we believe that the relative factor endowments and the inter-sectoral structure of these Central American economies offer additional and more elaborate explanations for our results.

Since the Central American countries are rather similar in terms of relative factor endowments and technology[9], the Internal Liberalization will not stimulate much trade creation based on comparative advantage. Instead, this intra-regional liberalization will give rise to new intra-industry trade, often resulting from scale economies and product differentiation.

On the other hand, the United States' share of skilled labor and capital in added value is 72.2% versus 67.8% for the SICA countries. Therefore, the External Liberalization will result in a pattern of Central American specialization in sectors relatively intensive in unskilled labor, like Sugar, Other Agriculture, Fiber or the Salvadoran Textile industry. The final outcomes in terms of welfare favor the Internal Liberalization scenario, because of the stronger linkages of Leather, Beverages and Tobacco, Milk and Dairy, Meat or Forest-Wood with the rest of the CA economies.

5. Conclusions

[9] More specifically, the countries in our aggregation that do not belong to the SICA area (ROW, USA, China, EU and Mexico) have an average share of skilled labor and capital in added value of 71.9% with a standard deviation of 8.1. On the other hand, the SICA countries show an average of 69.2% with a standard deviation of 6.9. And if we exclude Belize and the Dominican Republic from SICA, our average will be 67.8% with a standard deviation of 6.7.

In this paper we have made an attempt to compare the consequences of an intra-regional trade liberalization (consisting in the elimination of the pending barriers in the Customs Union agreements) versus an inter-regional trade liberalization (consisting in a deepening of the DR-CAFTA agreements) for Central America. It is important to notice that, under both scenarios, El Salvador and Panama are the countries that stand more to gain from higher trade freeness.

Under an inter-regional liberalization process, El Salvador will be the preferred location for the setup of maquila-based export platforms of Textile products linked to the USA. Nevertheless, the intense factor reallocations will lower some welfare gains and, generally speaking, under the External Liberalization the resulting productive chains seem to add value modestly for Central America. These gains from the External Liberalization tend to be lower and more sectorally concentrated than those from the Internal Liberalization.

The SICA area is characterized by an equivalent variation under the Internal Liberalization that is positive and almost 5 times higher than under the External Liberalization. However, the world as a whole would gain slightly more under the External Liberalization (See Figure 1). These results may call the attention of the Central American authorities to decide which liberalization processes to prioritize, given the promising opportunities opened by the Internal Liberalization within SICA; opportunities that could also strengthen the Central American position in negotiations with the United States, once the External Liberalization was pursued.

These conclusions confirm that the impact of DR-CAFTA is limited in terms of development. They also emphasize the convenience of a combined strategy on extra-regional and intra-regional agreements. And they are encouraging to explore the potential of intra-regional trade; the culmination of the negotiation with Panama; the removal of the restrictions to free trade between Costa Rica and its SICA partners; and also the elimination of the exceptions to a free trade regime for the products in the Annex A of the treaty.

6. References

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