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Is the effect of economic integration on trade margins time sensitive? Sectoral evidence from Latin America

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IS THE EFFECT OF ECONOMIC INTEGRATION ON TRADE MARGINS TIME SENSITIVE? SECTORAL EVIDENCE FROM LATIN AMERICA

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Abstract

The present paper follows the methodology of Baier et al (2011) and Hummels and Klenow (2005) to determine the effects of different levels of EIAs (non-reciprocal PTA, PTA, FTA and customs unions) on the intensive and the extensive margins of trade. It uses a gravity equation for the exports of eleven countries of the Latin American Integration Association (LAIA) to 161 partners over the period 1962-2009.

The long time period considered will allow us to determine whether different effects on trade margins might arise on the following two sub-periods: 1962-1989 and from 1989 onwards (before and after the proliferation of regional integration agreements and the deepening of the liberalization process in the region). Finally, we focus on those specific sectors in which Latin American countries present a higher relative participation.

1. Introduction

This paper, using a gravity equation and following the methodology of Baier et al (2011) and Hummels and Klenow (2005), seeks to determine the effects of different levels of Latin American economic integration agreements (EIAs) on the intensive and the extensive margins of trade. In addition, as we are aware that trade liberalisation in developing countries might have had a different impact on trade in different periods (see, for example, Florensa et al. 2011 for a comparison before and after the Latin American crises), we distinguish between two different time periods.

In this sense, it is important to note that there has been a considerable growth in the number of EIAs since the 90s, and that over the last two decades of this "new" wave of regionalism, not only has the number of EIAs increased significantly, but also the complexity of the regionalisation processes. For example, there has been a proliferation of North-South agreements, as well as the creation and the enhancement of deeper economic integration agreements. Nonetheless, Pomfret (2007) concludes that the long-term dynamics of EIAs lead, in the majority of cases, to ineffectiveness, and points out that "the increased complexity of regional arrangements opens up opportunities for managed trade that can benefit insiders and become a stumbling block to progress at global level" (page 940).

This paper focuses on Latin America for at least four main reasons. First, this type of analysis is relevant in a region where the commitment to economic integration is frequently questioned, as proved by the recent suspension of Paraguay as a member of Mercosur and the incorporation of Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela as associate or accessing members. Second, there has been a series of efforts to intensify trade relations between the European Union (EU) and Latin America. However, negotiations have been suspended, as a number of countries in the region feel that the EU pushes for concessions that would undermine domestic industries. Third, as regional integration reinforces pre-existing patterns of trade interdependences (Krapohl and Fink, 2013), diversification from traditional exports to non-traditional exports may have not changed significantly. Finally, the new generation of recent integration agreements, such as the Union of South American Nations, the Pacific

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Alliance, and the Community of Latin American and Caribbean States has raised the debate on the sustainability and the effects of deeper integration in the region (Peña, 2013).

Previous research (Florensa et al, 2013a and 2013b) analyses the consequences of Latin American economic integration on trade margins over the period 1962-2005. The results show that the signed integration agreements in the region have positively affected the intensive and extensive margins of trade and that the deepest integration agreements have a larger impact on trade margins than shallower ones. Nonetheless, when the effect of economic integration is analysed for different sectors (primary goods and agricultural manufactures, industrial manufactures and mineral fuels, lubricants and related materials), the deepest integration agreements do not seem to have fostered exports of new industrial products (the extensive margin does not increase); although both deeper and shallower agreements seem to have maintained and enhanced trade relations of primary goods and agricultural manufactures (the intensive margin increases) over time.

The present paper goes further by analysing the effect of EIAs on trade margins in two different periods, and a more disaggregated trade classification is used. In particular, we consider the two abovementioned forms of integration, known as the "old" and "new" regionalisms (Baier et al, 2006) by focusing on two sub-periods: 1962-1989 and 1990-2009.[2] Second, we focus on those specific sectors in which Latin American countries present a higher relative participation.

Our results point towards the idea that the extensive and intensive margins of trade have increased with the proliferation of new generation agreements in those sectors in which the considered developing nations export to a greater extent. These results have important policy implications, as an increase in the extensive margin can be understood as a diversification of the export matrix (and hence the structure of domestic production), while an increase in intensive margin can result in the concentration of the export matrix. To obtain a higher positive effect of deeper agreements on the extensive margin of different sectors would be in line with development and industrialisation objectives in the region.

This paper is divided into six parts: after the introduction, section 2 presents the literature review and a brief description of the Latin America integration process. Section 3 describes the methodology; section 4 describes data, sources and variables and includes a descriptive analysis. Section 5, shows the main results that aim to answer whether the effect of economic integration on trade margins is time sensitive. This section also includes the analysis for specific sectors. Finally, the last section introduces the conclusions.

2. Background

2.1. Literature Review

The analysis of the effects of EIAs on welfare gains among the member countries has generated an important discussion in the trade literature. Also, the interest in determining whether an increase in a country's exports is due to maintaining and enhancing trade relations over time or to the appearance of new products and markets, has led to the study of the so-called intensive and extensive margins of trade. Since the 1950's (Viner, 1950), many authors have contributed to this debate, especially in the early 1990's when there was a considerable increase in the number of studies based on gravity models (Eichengreen and Frankel 1995, Frankel et al. 1996, 1998; Soloaga and Winters 2001, etc.).

The effect of EIAs on international trade has generally been analysed by the gravity equation, where the dependent variable is the total value of exports (or imports)

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[2] Note that the second sub-period starts in 1984 in order to have enough data to perform the regressions.

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between two countries and the existence of an EIA has been modelled by including a dichotomous variable between the explanatory variables.

Some of these recent studies considering aggregate trade flows are Carrère (2006), Magee (2008) and Martínez-Zarzoso et al. (2009). Recalde and Florensa (2009), and Recalde et al. (2010) can be mentioned as an application in the case of the Southern Common Market (Mercosur). Most of these papers are based on a version of the gravity model that assumes homogeneous firms and consumer preference for variety. These two assumptions imply that all products are traded with all destinations.

However, empirical evidence indicates that only a few firms export and these exporters sell to a limited number of countries. This situation has led to the development of new theories concerning international trade based on the heterogeneity of firms (only the most productive export) and the existence of fixed exporting costs (Melitz, 2003).

Chaney (2008) shows that when goods are homogeneous and have a high elasticity of substitution, the intensive margin is sensitive to changes in trade barriers while the extensive margin is relatively minor. In contrast, when goods are differentiated and have low elasticity of substitution, lower tariffs on imports will allow firms with lower levels of productivity to enter new markets, thereby affecting the extensive margin.

As regards the studies that provide background to this work, it is worth mentioning Hummels and Klenow (2005), hereafter referred to as HK, and Baier et al (2011), hereafter referred to as BBF. For the effect of specific EIAs, Hillberry and McDaniel (2003) and Kehoe and Ruhl (2013) focus on the North America Free Trade Agreement (NAFTA), and Bensassi et al. (2012) focus on the effects of the Barcelona Process on North African countries.

Hummels and Klenow (2005) found that the extensive margin accounts for 60% of export growth in major economies. From a different perspective, Hillberry and McDaniel (2003) apply a decomposition of growth in trade that provides evidence about whether the United States trades more of the same products with partners in NAFTA since 1993, or whether they trade new products. Their results show that both margins coexist after the creation of NAFTA. Bensassi et al. (2012) follow the decomposition of trade proposed by Hillberry and Hummels (2008) and they show that North African countries enjoyed significant positive returns from the Barcelona Process, through increased exports of manufactured products to the European Union. BBF is the closest related paper to our research. These authors analyse the effects of different economic integration agreements on the intensive and extensive (goods) margins and distinguish between the short and the long-term effects.

2.2. The Latin American integration process

The group of eleven Latin American countries under analysis signed a significant number of EIAs over the period 1962-2009 (Tables A.1, A.2 and A.3 in the Appendix summarise this information. Note that these tables contain the existing agreements to the year 2009, so the evolution from shallow to deep EIAs is not shown).[3] First, the 1960 Montevideo Treaty created the Latin American Free Trade Association (LAFTA), signed initially by Argentina, Brazil, Chile, Mexico, Paraguay, Peru and Uruguay and as of 1970, LAFTA had expanded to include four more nations: Bolivia, Colombia, Ecuador, and Venezuela. The signatories hoped to create a common market in Latin America and offered tariff rebates among member nations. LAFTA came into effect on January 1962 and was superseded in 1980 by the Latin American Integration Association (LAIA). Cuba was the last country to accede, becoming a full member of LAIA in 1999. LAIA is nowadays the largest Latin American integration group and

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[3] Table A.1 lists the trade agreements of LAIA members with other EIAs; Table A.2 lists the bilateral trade agreements of LAIA members with third countries and Table A.3 lists the countries involved in the Generalized System of Preferences.

includes all the eleven exporting countries included in the analysed sample of countries.

Second, the Andean Pact came into existence with the signing of the Cartagena Agreement in 1969 by Bolivia, Chile, Colombia, Ecuador and Peru. In 1973, the pact gained its sixth member, Venezuela. In 1976, however, its membership was again reduced to five when Chile withdrew. Venezuela announced its withdrawal in 2006, reducing the Andean Community to four member states. The Andean Community (or CAN, called the Andean Pact until 1996), is nowadays a customs union.

Third, the Mercosur was created in 1991 by the Asuncion Treaty and was signed initially by Argentina, Brazil, Paraguay and Uruguay. It should become a customs union in 1995, but in practice it is still an imperfect customs union (Phillips, 2003). Bolivia and Chile have been associate members since 1996; Peru since 2003; Colombia and Ecuador since 2004. Venezuela has been incorporated, while Paraguay was suspended in 2012. Bolivia has been an accessing member since December 2012.

Recently, following the new cooperation agreement with Mercosur, the Andean Community gained four new associate members: Argentina, Brazil, Paraguay and Uruguay. These four Mercosur members were granted associate membership in 2005. Countries in other regions have also signed agreements with LAIA members. For example, over the time period considered, the EEA[4] has signed an integration agreement with Chile and Mexico, the CARICOM with Colombia and Venezuela, while Canada, Mexico and the United States have signed the NAFTA. Finally, Chile signed the Trans-Pacific Strategic Economic Partnership with Brunei, New Zealand and Singapore in 2007 (Table A.1).

Chile has signed the largest number of bilateral agreements in the region: with Bolivia, Canada, China, Colombia, Costa Rica, El Salvador, Honduras, India, Japan, Mexico, Korea, Panama, Peru, Venezuela and the United States (Table A.2). In fact, Chile has undergone the farthest-reaching liberalisation process in the Latin American region over the period 1994-2008 and together with Mexico seems to have liberalised relatively more within other integration agreements, such as the NAFTA and the EU, than within LAIA (Florensa et al, 2011). Mexico is also worth highlighting for having signed a number of important bilateral agreements: it signed EIAs with Bolivia, Chile, Colombia, Costa Rica, Israel, Japan and Nicaragua. Other bilateral agreements are Guatemala-Venezuela and Peru-United States (Table A.2).

An important number of developed countries have signed non reciprocal agreements with developing countries. For example, Japan and Norway in 1971; New Zealand in 1972; Australia and Canada in 1974; Russia in 1994; and Turkey in 2002 all signed the Generalised System of Preferences with all the LAIA countries (Table A.3).

Tables A.1 to A.3 show the gradual disappearance of new agreements under the Generalised System of Preferences, which granted concessions by developed countries to developing ones, as well as the proliferation of bilateral agreements between countries in the region and between countries and trading blocks that already existed.

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[4] The European Free Trade Association (EFTA) is a trade block created in 1960 by Austria, Denmark, the United Kingdom, Norway, Portugal, Sweden and Switzerland. Finland became a member in 1961, Iceland in 1970 and Liechtenstein in 1991. Following the abandonment of EFTA and the entry into the European Community of the United Kingdom and Denmark in 1973, Portugal in 1986, Austria, Sweden and Finland in 1995, the importance of EFTA diminished. Nowadays, this block consists of Switzerland, Iceland, Liechtenstein and Norway and they have a free trade area with the EU (European Economic Area, or EEA for its acronym in English).

3. Methodology

On the one hand, the methodology in HK used bilateral trade flows at a high level of disaggregation of products seeking to explain the growth in exports by major exporting "quantities" of a particular good (IM) or a wider range of goods (EM). Therefore, we follow the methodology in HK, as it makes possible to compute the so-called "goods" margins of trade.

On the other hand, the present article uses the methodology in BBF to measure the effects of four types of EIAs on Latin American countries: a) nonreciprocal or one-way preferential trade agreements (NRPTA), which generally entail concessions by an industrialized country to less developed countries; b) reciprocal or two-way preferential trade agreements, or PTA; c) free trade agreements (FTA), if the members of a preferential area go so far as to eliminate all tariffs and quantitative import restrictions among themselves and d) customs unions (CU), whereby the members of a FTA go beyond removing trade barriers among themselves and set a common level of trade barriers for third countries.

By using a panel of bilateral trade flows of goods for a large number of countries and for the period 1962-2009, we will distinguish the effects of different levels of integration in the signed arrangements. The length of this period will allow us not only to study the short and long-term ("timing") effects, but also to divide it into two different sub-periods, i.e. before and after the proliferation of Latin American EIAs in the 90s.

With respect to estimating the effects of EIAs, if this variable is correlated with the error term in gravity equations, it is econometrically endogenous and ordinary least squares can lead to biased and inconsistent coefficient estimates. BBF argues that endogeneity bias[5] is due to self-selection of country pairs into EIA. In order to eliminate endogeneity bias from the variable EIA, they propose the use of panel techniques and estimation by fixed effects (FE) of the following equation (Specification 1):

$$lnX_{ijt} = \beta_0 + \beta_1 EIA_{ijt} + \eta_{ij} + \delta_{it} + \psi_{jt} + \varepsilon_{ijt} \tag{1}$$

Where η_{ij} is a country-pair fixed effect to capture all time-invariant bilateral factors influencing nominal trade flows; δ_{it} and ψ_{jt} are exporter-time and importer-time fixed effects, respectively, to capture time-varying exporter and importer GDP, as well as all other time-varying country-specific effects that are unobservable in i and j and influence trade, including the exporter's and importer's multilateral price resistance terms.

In order to address the issue of the "timing" effects of EIAs, BBF use an additional specification:

$$lnX_{ijt} = \alpha_0 + \alpha_1 EIA_{ijt} + \alpha_2 EIA_{ijt-5} + \alpha_3 EIA_{ijt-10} + \eta_{ij} + \delta_{it} + \psi_{jt} + \varepsilon_{ijt} \tag{2}$$

Specification 2 generalizes Specification 1 by including lags of the EIA variable to distinguish between current and lagged effects (EIA_{ijt-5} and EIA_{ijt-10}).

Whereas Baier and Bergstrand (2007) and BBF worked with 5-year interval data, we work with yearly data, as in Florensa et al (2013a and 2013b).

In the empirical analysis, we estimate Specifications 1 and 2, whereby X_{ijt} might denote the value of exports of goods from country i to j in the year t (TRADE), the EM or the IM.[6]

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[5] For a complete explanation of this issue, see BBF and Baier and Bergstrand (2007).

[6] We also estimate a third specification based on first-differences as follows:

$$\Delta lnX_{ij,t-(t-5)} = \gamma_0 + \gamma_1 \Delta EIA_{ij,t-(t-5)} + \gamma_2 \Delta EIA_{ij,(t-5)-(t-10)} + \delta_{i,t-(t-5)} + \psi_{j,t-(t-5)} + \varepsilon_{ij,t-(t-5)}$$

These results have not been included in the paper to save space but they are available upon request.

As pointed above, we employ the methodology developed in HK to obtain the EM and the IM. If X_{ijt} is the value of country i´s exports to country j in year t, the extensive margin of goods exported from i to j in any year t is defined as:

$$EM_{ijt} = \frac{\sum_{m \in M_{ijt}} X_{wjt}^m}{\sum_{m \in M_{wjt}} X_{wjt}^m} \qquad (3)$$

Where X_{wjt}^m is the value of the world's exports to country j in product m in year t; M_{wjt} is the set of all products exported by the world to country j in year t and M_{ijt} is the subset of all products exported from i to j in year t. Hence, EM_{ijt} is a measure of the fraction of all products that are exported from i to j in year t, whereby each product is weighted by the share that product represents of world exports to j in year t.
HK define the intensive margin of goods exported from i to j in year t as:

$$IM_{ijt} = \frac{\sum_{m \in M_{ijt}} X_{ijt}^m}{\sum_{m \in M_{ijt}} X_{wjt}^m} \qquad (4)$$

Where X_{ijt}^m is the value of exports from i to j in product m in year t. IM_{ijt} represents the market share of country i in country j´s imports from the world within the set of products that i exports to j in year t. One of the main properties of the HK methodology is that the product of the two margins equals the ratio of exports from i to j relative to country j total imports.

$$EM_{ijt}\ IM_{ijt} = \frac{\sum_{m \in M_{ijt}} X_{ijmt}}{\sum_{m \in M_{Wjt}} X_{Wjmt}} = X_{ijt} / X_{jt} \qquad (5)$$

Where X_{jt} denotes j´s imports from the world. Taking the natural logs of equation (5) and some algebra yields:

$$lnX_{ijt} = lnEM_{ijt} + lnIM_{ijt} + lnX_{jt} \qquad (6)$$

This methodology concludes that the log of the value of trade flows from i to j in the year t can be decomposed linearly into logs of the extensive margin, the intensive margin and the value of j´s imports from the world.
Two aspects worth indicating when applying this methodology are: a) due to using estimations with fixed effects, the term lnX_{jt} is included in the fixed time-importer effects ψ_{jt};[7] b) following BBF, HK methodology can be used in a panel that permits the use of the indicators employed in the construction of EM_{ijt} and IM_{ijt} so that they may vary over time.

4. Data, sources and variables

4.1. Data

In order to perform the empirical analysis, two main sources of data have been used: bilateral trade flows and a polychotomous variable representing the level of economic integration the agreement entails.[8] For the construction of the database, bilateral trade

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[7] When we estimate the specifications by using random effects, the Hausman test indicates that fixed effects are preferred to random effects.
[8] Polychotomous variables are categorical variables that can be classified into many categories.

flows for the period 1962-2009 were taken into account. Trade data for the period 1962-2000 were obtained from the NBER- United Nations trade data set, available at http://cid.econ.ucdavis.edu/data/undata/undata.html and documented in Feenstra et al. (2005), whereas WITS (COMTRADE) was used for the period 2001-2009. In both cases, the data are classified according to 4-digit Standard Industrial Trade Classification (SITC), Revision 2. The exporting countries are the 11 members of LAIA (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Paraguay, Venezuela and Uruguay)[9] while the importers are the 161 destination countries (see Table A.4 in the Appendix). In addition, we had to build a database with the same characteristics (period and classification of goods) considering the world as an exporter and the 161 destination countries as importers in order to calculate the margins of trade.

The variable indicating the level of integration between country pairs takes the form of a polychotomous index built by BBF and is available at www.nd.edu/~jbergstr/. BBF's polychotomous indexes for the period 1962-2005 were checked by the documents available in this database and also by the EIA set out in the website of the World Trade Organization (WTO). We have completed the polychotomous index for 2006 onward for our sample of countries.

The index is defined as follows: (0) when there is no EIA; (1) when the agreement is asymmetrical or one-way (NRPTA); (2) corresponds to two-way preferential trade agreements (PTA); (3) defines free trade agreements (FTA) and (4) refers to customs unions (CU).

Initially, the analysis is performed for all goods pooled together over the period 1962-2009, and for the two considered sub-periods. Then, we run regressions for different sets of products. In particular, we focus on the ten sectors that LAIA countries have the greatest relative participation on world exports. With regard to the sectors taken into account, the trade classification SITC2 includes 74 divisions from which we selected a group of 8 divisions and an additional category that includes the combination of divisions 61 and 85. Our selection has taken into account the following criteria: a) the share over the total value of exports, b) the relative participation over the total number of observations and c) the inclusion of those divisions that represent the two main export sectors in LAIA (primary goods and agricultural manufactures and industrial manufactures). The selected sectors (divisions) represent an average of 33% of LAIA exports and 28.3% of observations over the period 1962-2009.

The first and second columns in Table A.5 (Appendix) list the selected sectors; the third column shows the number of observations; the fourth column shows the participation of each sector in the total number of observations, while the last column lists the participation of each sector in the value of total exports. Sectors are ordered from higher to lower importance according to the indicator in the last column.

4.2. Descriptive analysis

Figures 1-15 in the Appendix show the evolution of the participation in exports of the analysed sectors by different levels of EIAs. Overall, there is a growing export share of the LAIA countries with countries with which they have some type of trade agreement. In the case of NRPTAs (EIA=1), it can be seen that for most of the sectors, there was a significant increase in the share of exports up to the early nineties, thereafter the trend is reversed with the proliferation of deepest trade agreements (FTAs and CUs). In the case of PTAs (EIA=2), there is a decrease in the share of exports of all sectors, which is maintained throughout the period, except for cereals. This share increase of cereals probably occurs because some destination countries with EIA=0, became countries with EIA=2.

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[9] Cuba has been a member since 1999, but it is not considered in the empirical analysis because trade data is available only for some years of the period.

With respect to the FTAs (EIA=3), there is a marked share increase of exports of cereals, vegetables and fruit and non-ferrous metals as from the signature of this kind of agreement. Concerning the rest of the items in the analysis, there is an increase up to the end of the nineties, when stabilisation takes place or there is a slight share decrease.

Three different performance types can be seen in relation to CUs (EIA=4). The textile, road vehicles and leather sectors show a decreasing share up to the start of the present century, when the trend is reversed; cereals and industrial machinery exhibit a diminishing share over the period while for the remaining sectors the share is almost constant.

5. Empirical analysis

5.1. Is the effect of economic integration on trade margins time sensitive?

Tables 1-2 show the main results of our regressions. Each table reports the results for three alternative LHS variables: Bilateral Trade (Trade), Extensive Margin (EM) and Intensive Margin (IM), respectively. Additionally, we have vertically ordered the list of existing EIAs from shallower to deeper economic integration.

Tables 1 and 2 show the results obtained when specification 1 (i.e. without lags for the variables of interest) and 2 (which includes lagged values of EIA dummies) are estimated, respectively. Table 1 shows that the estimated coefficients for IM of NRPTA and PTA are negative and significant when the full period is taken into account. Negative and significant coefficients for shallower trade agreements are also obtained by BBF and Florensa et al (2013a and 2013b); however, this result might be explained by a differential trend in the IM in different sub-periods. Whereas in the first period the IM is negative for NRPTA and PTA, it is positive and significant in the case of the IM for PTA in the second period. The coefficient for EM of PTA over the first period is positive and significant although it is negative over the second; the overall effect on the EM is positive and statistically significant. For the deepest EIAs (FTA and CU), Trade, EM and IM coefficients are positive in Specification 1 when the entire period is taken into account, although the coefficient of FTA is not significant on the intensive margin. Additionally, the effect on IM is larger than on EM in the case of CU.

When we focus on the second sub-period that covers the proliferation of deeper EIAs and other integration agreements in which developed countries are involved, positive and significant coefficients of FTAs and CUs are obtained for trade and IM in the current period. Based on the characteristics of the EIAs, previous research found that the deepest integration agreements have a greater effect on trade margins than shallower ones (BBF; Florensa et al, 2013a and 2013b). Nonetheless, when different time periods and exports of all goods are pooled together to analyse the effect of different EIAs on the EM and the IM, it seems that the deepest integration agreements in Latin America do have fostered exports of new products, although the PTAs signed over the period 1962-1989 (LAIA and the agreements under the Generalized System of Preferences)[10] have increased the extensive margin to a higher extent.

Columns 1-3 in Table 2 show a positive and significant coefficient for the 5-year lag of FTAs on the intensive margin, for the CU on both the EM and the IM, and the 5-year lag of the variable CU on the intensive margin. Therefore, the CU has the largest positive effect on both margins of trade, but it is in the intensive margin of trade where the positive and significant effect of economic integration seems to persist after 5 years.

In particular, the sum of the estimated coefficients for the CU and L5.CU variables is 0.741 when the dependent variable is the logarithm of the intensive margin; so, if a Latin American country engages in a customs union, the intensive margin of its exports

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[10] See Table A.1 and Table A.3 in the Appendix.

increases by 110% (($e^{0.741} - 1$) *100), and most of the observed effect is achieved after five years.

When different sub-periods are considered, the 10-year lag of PTAs, FTAs and CUs, and the 5-year lag of FTAs and CUs have a positive and significant effect on the intensive margin in the second sub-period. These results indicate not only that it is worth taking into account long-term effects when analysing the effect of regional integration in Latin American countries, but also that the agreements signed in the second sub-period have a more persistent effect on trade margins and, specifically, on the IM. Interestingly, obtained results show that the integration agreements in force during the first sub-period have contributed to the diversification of the export matrix; however, this positive effect has not persisted over time. During the second sub-period, both deeper and shallower agreements seem to have maintained and enhanced trade relations over time, and this positive effect occurs also in the long term. Then, we show that the most recent Latin American trade integration has contributed to increase the concentration of the export matrix. Finally, the obtained results show that the effect of economic integration is sensitive to the period of time taken into account.[11]

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[11] In specification 3, the variables difnrpta, difpta, diffta and difcu are associated with $\Delta EIA_{ij,t-(t-5)}$, and the variables difnrptalong, difptalong, difftalong and difculong with the further lag ($\Delta \text{EIA}_{ij,(t-5)-(t-10)}$). For the set of all goods, the results obtained display a positive and significant effect on the extensive trade margin for difpta only in the first sub-period. Nonetheless, for the second sub-period, the coefficient diffta is positive and significant on the IM, whereas the coefficient of difcu is positive and significant on bilateral trade, and this positive effect is channelled by the IM. These results are in line with results obtained with Specifications 1 and 2. As Specifications 1 and 2 seem to be capturing both the short and the long-term effects in a more accurate way than Specification 3, these are our preferred specifications.

Table 1. Main results for Specification 1, all goods. Period 1962-2009, sub-periods 1962-1989 and 1984-2009.

	1962-2009			1962-1989			1984-2009		
	TRADE(1)	EM(2)	IM(3)	TRADE (4)	EM (5)	IM (6)	TRADE (7)	EM (8)	IM (9)
NRPTA	-0.288***	-0.027	-0.263***	-0.457	0.007	-0.465	-0.068	-0.059	-0.011
	-2.906	-0.325	-2.781	-1.321	0.025	-1.442	-0.66	-0.64	-0.10
PTA	-0.007	0.123**	-0.130*	0.166	0.611***	-0.445***	0.191*	-0.148*	0.340***
	-0.088	2.014	-1.832	1.247	5.627	-3.595	1.93	-1.68	3.37
FTA	0.313***	0.185**	0.129	.	.	.	0.386***	0.002	0.384***
	3.521	2.527	1.519	.	.	.	3.97	0.02	3.90
CU	0.914***	0.250***	0.663***	.	.	.	0.778***	-0.058	0.836***
	7.828	2.608	5.972	.	.	.	5.77	-0.48	6.12
Number of observations	45303	45304	45303	22784	22784	22784	27071	27072	27071
R2	0.69	0.49	0.47	0.62	0.39	0.39	0.43	0.52	0.53

Notes: ***, **, * indicate significance at 1%, 5% and 10%, respectively. T-statistics are provided below every coefficient.

Table 2. Main results for Specification 2, all goods. Period 1962-2009, sub-periods 1962-1989 and 1984-2009.

	1962-2009			1962-1989			1984-2009		
	TRADE(1)	EM(2)	IM(3)	TRADE (4)	EM (5)	IM (6)	TRADE (7)	EM (8)	IM (9)
NRPTA	-0.232**	-0.126	-0.106	-0.419	-0.115	-0.304	-0.040	0.049	-0.089
	-2.201	-1.57	-1.049	-1.217	-0.442	-0.953	-0.32	0.49	-0.68
L5.NRPTA	-0.073	-0.132	0.059	-0.455	0.163	-0.618*	0.056	-0.011	0.067
	-0.59	-1.403	0.498	-1.233	0.583	-1.805	0.44	-0.11	0.50
L10.NRPTA	-0.064	0.028	-0.091	-0.2	-0.172	-0.028	-0.263	0.015	-0.277
	-0.376	0.215	-0.563	-0.46	-0.523	-0.07	-1.39	0.09	-1.38
PTA	-0.078	-0.111	0.033	-0.659	0.711	-1.371*	0.323	0.176	0.147
	-0.77	-1.443	0.342	-0.78	1.114	-1.75	2.49	1.66	1.07
L5.PTA	-0.064	-0.136*	0.072	0.084	-0.061	0.146	0.079	-0.027	0.107
	-0.604	-1.69	0.711	0.471	-0.452	0.876	0.66	-0.28	0.84
L10.PTA	0.076	0.069	0.006	-0.18	0.069	-0.249*	0.088	-0.297	0.385**
	0.78	0.94	0.068	-1.187	0.604	-1.773	0.62	-2.55	2.54
FTA	0.181*	0.055	0.126	.	.	.	0.355**	0.160	0.195
	1.833	0.731	1.331	.	.	.	3.09	1.7	1.6
L5.FTA	-0.077	-0.399***	0.322***	.	.	.	0.105	-0.206	0.311**
	-0.656	-4.466	2.86	.	.	.	0.89	-2.14	2.49
L10.FTA	0.237	-0.05	0.287**	.	.	.	0.123	-0.341*	0.464**
	1.601	-0.447	2.024	.	.	.	0.76	-2.58	2.7
CU	0.598***	0.342***	0.256*	.	.	.	0.260	0.039	0.221
	3.974	2.986	1.774	.	.	.	1.08	0.20	0.87
L5.CU	0.043	-0.442***	0.485***	.	.	.	0.212	-0.308	0.520***
	0.241	-3.286	2.859	.	.	.	1.31	-2.33	3.03
L10.CU	0.101	-0.088	0.19	.	.	.	-0.064	-0.524***	0.460**
	0.564	-0.645	1.1	.	.	.	-0.34	-3.41	2.31
Number of observations	25463	25463	25463	10856	10856	10856	12360	12360	12360
R2	0.68	0.63	0.57	0.54	0.50	0.51	0.49	0.64	0.57

Notes: ***, **, * indicate significance at 1%, 5% and 10%, respectively. T-statistics are provided below every coefficient.

5.2. Analysis by sector[12]

Tables 3-6 show separately the effects of different levels of EIAs: Table 3 for NRPTAs, Table 4 for PTAs, Table 5 for FTAs and Table 6 for CUs. These tables take into account exports of all sectors pooled together (all sectors) as well as the specific sectors defined in section 4 (see Table A.5). In addition, regressions of the entire period 1962-2009, and the sub-period 1984-2009 are shown separately[13]. These tables show the convenience of distinguishing among different divisions: in the previous sub-section, when all goods were pooled together, negative or not significant coefficients were obtained to a greater extent (see, especially the case of the shallower EIAs – NRPTAs and PTAs). Nonetheless, those results could lead to misleading interpretation, as Tables 3 and 4 show that this could be due to sectoral heterogeneity.

For the shallower EIAs, positive effects of NRPTAs on trade are found in sectors 68, 05, 04 and 99 in the current period for specification 1, and only in sector 05 for specification 2. This means that the estimated coefficients for the first specification may include effects that go beyond the current period. In all the sectors above mentioned the effects on trade are explained mainly by the IM. The table also shows a long-term effect on trade only in sector 67, which is also explained by the IM. The sectors 78 and 74 show a long-term effect of shallower EIAs, but in these cases are explained by the EM.

When regressions are run for the sub-period 1984-2009, similar conclusions are obtained but the effect is lower for sectors 68 and 05 and greater for sectors 04 and 99. It is not surprising that the IM of sectors 04 and 05, which suppose exports of primary goods, has increased to a greater extent, as these sectors are homogeneous, and then there is a lower margin for diversification. Nonetheless, it is important to note that also the IM has increased to a greater extent in some industrial manufactures (sector 68) over the second sub-period (second wave of regionalism), except for the case of sector 99 that has experienced a greater increase on the EM in the long-term, and then this result shows that non-reciprocal EIAs have increased the concentration of the export matrix in LAIA countries. In sum, the main effect was reflected mainly on the intensive margin in the most recent sub-period in non-ferrous metals, vegetables and fruits, cereals and leather.

Table 4 shows that in the entire period, PTAs have a positive effect on trade in the current period in the case of non-ferrous metals, vegetables and fruit, cereals and leather. Similar to NRPTAs these effects are explained by the IM. In terms of long-term, there is evidence of a positive effect on trade only for vegetables and fruit and iron and steel; and also the IM dominates. In the case of non-ferrous metal and cereals, there is a positive effect on the IM in the long term but it is compensated with a significant and negative effect on the EM that yields a non significant effect on the total trade. There is no evidence of a positive effect on the EM, except for electrical machinery in the current period. It is necessary to mention that there is an additional effect on trade in the current period for electrical machinery and iron and steel when the period 1984-2009 is taken into account. Additionally, for the same period there is evidence of a long run effect on trade for general industrial machinery.

In relation to Table 5 and for the period 1962-2009, there is a positive and significant effect on trade for a similar number of sectors: electrical machinery, non-ferrous metals, vegetables and fruit, cereals and leather in the current period. For all these sectors, the effect above mentioned is explained by the IM except for electrical machinery and vegetables and fruit, where the EM coefficients are positive and

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[12] This section includes the results for different sectors and for our preferred specifications (specifications 1 and 2). Full results are available upon request.

[13] In this section we only include the results for the second sub-period; as the estimates for the period 1962-1989, due to the lack of enough observations, do not allow the estimation of a number of coefficients.

significant but they represent only some 30% of the total increase on trade. Regarding this group of sectors, the effects on trade had been maintained in the long-term only in electrical machinery and vegetables and fruit. General industrial machinery and textiles also show a positive effect in the long term. For example, if a LAIA country engages in a FTA, its exports of vegetables and fruit increase by 1074% (($e^{2.463} - 1$) *100), and about 50% of this effect is achieved after ten years. Only with long-term effects can we mention the sector of iron and steel, general industrial machinery and textiles; in all cases, these effects are explained by the IM.

In the second sub-period, as has been previously found for the case of NRPTAs and PTAs, the positive and significant effects of FTAs are reflected mainly in the IM, excluding the case of sector 67 (iron and steel), which presents a positive and significant effect of the 5-year lag of FTA on the EM. Finally, the obtained results show that the FTAs signed in the Latin American region have not had positive consequences in terms of trade margins in the sector of road vehicles, which, in fact, is the most important sector of the total value of exports from the region (see Table A.5). Another aspect worth mentioning is the positive effect on trade in the current period for iron and steel and general industrial machinery when the second sub-period is considered.

Overall, Table 6 shows that CUs (Mercosur and Andean Community) present the most important effects and for a broader number of the selected sectors in the region. However, several differences among sectors must be mentioned. First, the elasticities obtained in the current period are in almost all the considered sectors much higher in magnitude than the elasticity for all goods pooled together. Otherwise, sector 78 (road vehicles) presents a considerably lower elasticity than the rest of selected sectors. This might be due to the fact that although this sector has the most important participation of LAIA members, it has shown special conditions that affect trade exchanges; this issue is very controversial and has been accentuated within Mercosur and particularly, between Brazil and Argentina over the recent years. Second, CUs have a positive and significant effect on the EM in the current period for the case of sectors 77, 05, and 04 and for the 5-year lag in the case of 67; surprisingly, two of these sectors (05 and 04) are primary goods and agricultural manufactures. Third, CUs increase the IM in the current period in all the sectors. Fourth, the 5-year lag of CUs presents a positive and significant effect on the IM in the case of sectors 77, 05, 67 and 65, but the 10-year lag of CUs is only positive and significant on the IM for sectors 77 and 05. With respect to the sub-period 1984-2009, as Latin American CUs were signed in the 90's, the results obtained over the entire period are explained by the evolution of the most recent wave of regionalism. Nonetheless, the obtained results show that it is important to take into account a long period in order to analyse differential "timing" and test whether positive effects are more persistent over time in trade margins.

Concerning specific sectors, and in line with results obtained in previous research (BBF, Florensa et al, 2013a and 2013b), customs unions present a more significant effect than partial trade agreements. Nonetheless, our results show that in the case of sector 99 (ie. leather, leather manufactures and footwear) the strongest positive effects on trade margins are for CUs (see Table 6) on the IM, but only in the current period. Otherwise, the NRPTAs have fostered growth of this type of industrial manufactures (which represent 1.5% of the value of exports from LAIA) to a greater extent on the EM but in the long term (see Table 3).

Table 3. Main results for Specification 1 and 2, by sector. Effect of NRPTA on trade. Period 1962-2009 and sub-period 1984-2009.

		1962-2009			1984-2009		
		TRADE(1)	EM(2)	IM(3)	TRADE (7)	EM (8)	IM (9)
All sectors	NRPTA- Specification 1	-0.288***	-0.027	-0.263***	-0.068	-0.059	-0.011
	NRPTA- Specification 2	-0.232**	-0.126	-0.106	-0.040	0.049	-0.089
	L5.NRPTA	-0.073	-0.132	0.059	0.056	-0.011	0.067
	L10.NRPTA	-0.064	0.028	-0.091	-0.263	0.015	-0.277
SECTOR 78	NRPTA- Specification 1	-1.248***	-0.335***	-0.911***	-0.991***	-0.615***	-0.375
	NRPTA- Specification 2	-1.681***	-0.604***	-1.077***	-1.806***	-0.558**	-1.248***
	L5.NRPTA	0.108	-0.280	0.388	0.098	-0.273	0.371
	L10.NRPTA	-0.369	0.660**	-1.029*	-0.767	0.330	-1.098*
SECTOR 77	NRPTA- Specification 1	0.132	0.270***	-0.136	0.376*	0.165	0.213
	NRPTA- Specification 2	-0.155	0.223	-0.378	0.085	0.054	0.031
	L5.NRPTA	0.325	-0.104	0.430	0.370	-0.222*	0.592**
	L10.NRPTA	0.590	-0.005	0.595	0.638	-0.243	0.881**
SECTOR 68	NRPTA- Specification 1	0.532**	-0.135	0.668***	0.475*	-0.361***	0.836***
	NRPTA- Specification 2	0.187	-0.296*	0.482	-0.122	-0.599***	0.477
	L5.NRPTA	-0.864**	-0.455**	-0.409	-0.735*	-0.545***	-0.189
	L10.NRPTA	0.138	0.298	-0.160	0.104	-0.123	0.227
SECTOR 05	NRPTA- Specification 1	0.922***	0.386***	0.536***	0.624***	0.039	0.587***
	NRPTA- Specification 2	0.722***	-0.039	0.761***	0.429*	-0.320**	0.749***
	L5.NRPTA	-0.085	0.047	-0.132	-0.215	-0.302**	0.087
	L10.NRPTA	0.390	-0.071	0.461	-0.249	-0.397*	0.148
SECTOR 67	NRPTA- Specification 1	-0.274	-0.129	-0.145	0.319	0.018	0.302
	NRPTA- Specification 2	-0.651*	-0.467**	-0.183	0.023	-0.569***	0.592
	L5.NRPTA	1.231***	0.206	1.025***	1.432***	0.290	1.141***
	L10.NRPTA	0.624	0.42	0.204	-0.304	-0.150	-0.154
SECTOR 74	NRPTA- Specification 1	-0.585***	-0.328***	-0.258*	-0.002	-0.213*	0.210
	NRPTA- Specification 2	-0.412*	-0.343***	-0.069	-0.329	-0.357***	0.027
	L5.NRPTA	-0.031	0.017	-0.048	0.288	0.002	0.286
	L10.NRPTA	0.470	0.516***	-0.047	0.012	0.026	-0.014
SECTOR 04	NRPTA- Specification 1	1.780***	0.154	1.628***	1.852***	0.634***	1.218***
	NRPTA- Specification 2	-2.580***	-1.960***	-0.621	-0.615	0.104	-0.719
	L5.NRPTA	-0.369	-0.419	0.051	-0.530	-0.076	-0.454
	L10.NRPTA	-0.364	0.409	-0.774	0.280	-0.285	0.565
SECTOR 65	NRPTA- Specification 1	-0.398***	-0.218**	-0.182	-0.573***	-0.241*	-0.334*
	NRPTA- Specification 2	-0.516**	-0.424***	-0.092	-0.536**	-0.715***	0.179
	L5.NRPTA	0.063	0.221	-0.158	-0.445*	0.189	-0.633**
	L10.NRPTA	-0.852***	0.018	-0.870***	-0.882**	-0.335	-0.548
SECTOR 99	NRPTA- Specification 1	0.388**	-0.110	0.498**	0.553**	0.132	0.421
	NRPTA- Specification 2	-0.160	0.114	-0.274	1.379**	0.090	1.290*
	L5.NRPTA	-0.416	-0.081	-0.335	-0.143	0.227	-0.370
	L10.NRPTA	-0.207	0.283	-0.490	0.053	1.056***	-1.002*

Notes: ***, **, * indicate significance at 1%, 5% and 10%, respectively.

Table 4. Main results for Specification 1 and 2, by sector. Effect of PTA on trade. Period 1962-2009 and sub-period 1984-2009.

		1962-2009			1984-2009		
		TRADE(1)	EM(2)	IM(3)	TRADE (7)	EM (8)	IM (9)
All sectors	PTA- Specification 1	-0.007	0.123**	-0.130*	0.191*	-0.148*	0.340***
	PTA- Specification 2	-0.078	-0.111	0.033	0.323	0.176	0.147
	L5.PTA	-0.064	-0.136*	0.072	0.079	-0.027	0.107
	L10.PTA	0.076	0.069	0.006	0.088	-0.297	0.385**
SECTOR 78	PTA- Specification 1	-0.610***	0.047	-0.657***	-0.466	-0.347**	-0.120
	PTA- Specification 2	-1.083***	-0.322	-0.761*	-0.739	-0.077	-0.662
	L5.PTA	0.187	0.033	0.154	0.083	-0.173	0.255
	L10.PTA	-0.411	0.122	-0.533	-0.730	0.381	-1.112**
SECTOR 77	PTA- Specification 1	0.208	0.146**	0.063	0.389*	-0.268**	0.658***
	PTA- Specification 2	-0.562**	-0.127	-0.435*	0.044	0.009	0.035
	L5.PTA	0.316	-0.062	0.378*	0.277	-0.058	0.336
	L10.PTA	-0.060	-0.233**	0.173	0.012	-0.322**	0.335
SECTOR 68	PTA- Specification 1	0.799***	-0.126	0.925***	0.782***	-0.316**	1.097***
	PTA- Specification 2	-0.028	-0.129	0.101	-0.397	-0.345*	-0.052
	L5.PTA	0.277	-0.454**	0.731**	0.407	-0.542**	0.950**
	L10.PTA	-0.606*	-0.338*	-0.268	-0.832	-0.678*	-0.154
SECTOR 05	PTA- Specification 1	1.015***	-0.002	1.021***	0.957***	-0.157	1.118***
	PTA- Specification 2	0.968***	-0.197	1.165***	1.058***	-0.184	1.242***
	L5.PTA	-0.177	-0.236	0.060	-0.086	-0.447***	0.361
	L10.PTA	1.037***	-0.270	1.306***	0.335	-0.466*	0.801
SECTOR 67	PTA- Specification 1	0.154	-0.188*	0.342*	0.431*	-0.166	0.596**
	PTA- Specification 2	-0.795**	-0.511***	-0.284	0.096	-0.696***	0.792*
	L5.PTA	1.150***	0.292*	0.858***	1.451***	0.393**	1.057***
	L10.PTA	0.267	0.029	0.237	-0.316	-0.316	0.000
SECTOR 74	PTA- Specification 1	0.034	-0.214***	0.249**	0.357*	-0.198*	0.557***
	PTA- Specification 2	-0.234	-0.265**	0.031	0.203	-0.076	0.279
	L5.PTA	0.126	-0.059	0.185	0.462*	-0.019	0.481**
	L10.PTA	0.462***	0.008	0.454***	0.069	0.112	-0.043
SECTOR 04	PTA- Specification 1	1.303***	0.068	1.234***	1.456***	0.076	1.375***
	PTA- Specification 2	-2.116***	-2.083***	-0.032	-0.325	-0.184	-0.141
	L5.PTA	0.115	-0.915***	1.031**	0.015	-0.598*	0.613
	L10.PTA	-1.116**	0.002	-1.117**	0.052	-0.110	0.162
SECTOR 65	PTA- Specification 1	-0.437***	-0.218**	-0.218*	-0.013	-0.256**	0.245
	PTA- Specification 2	-0.544**	-0.498***	-0.047	-0.057	-0.628***	0.571**
	L5.PTA	0.554**	0.303**	0.250	-0.056	0.251	-0.308
	L10.PTA	-0.894***	0.071	-0.965***	-0.334	-0.654***	0.320
SECTOR 99	PTA- Specification 1	0.552**	0.021	0.531***	0.406*	0.084	0.322
	PTA- Specification 2	-0.308	-0.014	-0.295	0.798	-0.048	0.846
	L5.PTA	-0.331	-0.544**	0.213	0.033	-0.494	0.527
	L10.PTA	0.291	-0.086	0.377	0.223	0.541	-0.318

Notes: ***, **, * indicate significance at 1%, 5% and 10%, respectively.

Table 5. Main results for Specification 1 and 2, by sector. Effect of FTA on trade. Period 1962-2009 and sub-period 1984-2009.

		1962-2009			1984-2009		
		TRADE(1)	EM(2)	IM(3)	TRADE (7)	EM (8)	IM (9)
All sectors	FTA- Specification 1	0.313***	0.185**	0.129	0.386***	0.002	0.384***
	FTA- Specification 2	0.181*	0.055	0.126	0.355**	0.160	0.195
	L5.FTA	-0.077	-0.399***	0.322***	0.105	-0.206	0.311**
	L10.FTA	0.237	-0.050	0.287**	0.123	-0.341*	0.464**
SECTOR 78	FTA- Specification 1	-0.786***	0.025	-0.812***	-0.422	-0.156	-0.267
	FTA- Specification 2	-1.287***	-0.300	-0.987***	-0.876**	0.002	-0.877**
	L5.FTA	-0.320	-0.245	-0.075	-0.313	-0.298	-0.014
	L10.FTA	-0.482	0.045	-0.527	-0.834	0.276	-1.110**
SECTOR 77	FTA- Specification 1	0.478***	0.139*	0.340**	0.450**	-0.154	0.604***
	FTA- Specification 2	-0.129	0.031	-0.160	-0.018	0.020	-0.039
	L5.FTA	0.418*	-0.188	0.606***	0.353*	-0.205*	0.558***
	L10.FTA	0.153	-0.245**	0.397*	0.014	-0.347**	0.361
SECTOR 68	FTA- Specification 1	0.749***	-0.114	0.863***	0.796***	-0.304**	1.100***
	FTA- Specification 2	0.273	-0.165	0.438	0.083	-0.297*	0.380
	L5.FTA	-0.063	-0.379**	0.316	0.045	-0.445**	0.491
	L10.FTA	-0.350	-0.399**	0.049	-0.468	-0.641**	0.173
SECTOR 05	FTA- Specification 1	1.284***	0.369***	0.917***	1.062***	0.152	0.913***
	FTA- Specification 2	1.212***	0.095	1.117	1.009***	-0.090	1.099***
	L5.FTA	0.148	0.086	0.062***	-0.108	-0.209	0.102
	L10.FTA	1.251***	-0.415***	1.666***	0.472	-0.628**	1.100**
SECTOR 67	FTA- Specification 1	0.293	-0.046	0.339*	0.593**	0.103	0.490**
	FTA- Specification 2	-0.482	-0.542***	0.06	0.237	-0.611***	0.848**
	L5.FTA	1.233***	0.214	1.019***	1.465***	0.303*	1.163***
	L10.FTA	0.431	-0.022	0.452	-0.118	-0.314	0.197
SECTOR 74	FTA- Specification 1	0.137	-0.130**	0.267**	0.434**	-0.095	0.530***
	FTA- Specification 2	-0.047	-0.253**	0.206	0.253	-0.149	0.402*
	L5.FTA	0.127	-0.115	0.242	0.291	-0.051	0.342*
	L10.FTA	0.401*	-0.080	0.481**	-0.038	-0.029	-0.010
SECTOR 04	FTA- Specification 1	0.983***	0.033	0.952***	1.172***	0.044	1.128***
	FTA- Specification 2	-2.475***	-2.257***	-0.218	-0.491	-0.406	-0.085
	L5.FTA	-0.518	-0.941***	0.423	0.316	-0.327	0.643
	L10.FTA	-1.249**	-0.416	-0.833	0.094	-0.417	0.511
SECTOR 65	FTA- Specification 1	-0.216	-0.218**	0.003	-0.011	-0.030	0.022
	FTA- Specification 2	-0.348*	-0.370***	0.022	-0.017	-0.389***	0.373
	L5.FTA	0.411**	0.005	0.406*	-0.030	0.101	-0.131
	L10.FTA	-0.372*	-0.031	-0.341	-0.115	-0.579**	0.464
SECTOR 99	FTA- Specification 1	0.877***	0.011	0.866***	0.439*	0.096	0.342
	FTA- Specification 2	0.031	-0.132	0.163	1.144**	-0.123	1.267*
	L5.FTA	-0.539*	-0.296	-0.243	-0.440	0.046	-0.486
	L10.FTA	0.509	-0.231	0.741**	0.406	0.485	-0.079

Notes: ***, **, * indicate significance at 1%, 5% and 10%, respectively.

Table 6. Main results for Specification 1 and 2, by sector. Effect of CU on trade. Period 1962-2009 and sub-period 1984-2009.

		1962-2009			1984-2009		
		TRADE(1)	EM(2)	IM(3)	TRADE (7)	EM (8)	IM (9)
All sectors	CU- Specification 1	0.914***	0.250***	0.663***	0.778***	-0.058	0.836***
	CU- Specification 2	0.598***	0.342***	0.256*	0.260	0.039	0.221
	L5.CU	0.043	-0.442***	0.485***	0.212	-0.308	0.520***
	L10.CU	0.101	-0.088	0.190	-0.064	-0.524***	0.460**
SECTOR 78	CU- Specification 1	0.679***	0.059	0.620***	0.657**	-0.378*	1.034***
	CU- Specification 2	1.167**	0.183	0.985**	0.117	0.630	-0.513
	L5.CU	-0.136	-0.653*	0.517	-0.263	-0.863***	0.600
	L10.CU	-0.966*	0.049	-1.015**	-1.330**	0.255	-1.584***
SECTOR 77	CU- Specification 1	1.435***	0.224**	1.213***	1.616***	-0.235	1.852***
	CU- Specification 2	0.145	0.326*	-0.181	-0.299	0.881***	-1.181*
	L5.CU	0.835**	-0.653***	1.488***	0.932***	-0.717***	1.648***
	L10.CU	0.166	-0.379**	0.545**	-0.095	-0.575***	0.480
SECTOR 68	CU- Specification 1	1.540***	0.041	1.498***	1.395***	-0.130	1.525***
	CU- Specification 2	0.397	-0.145	0.542	0.200	-0.413	0.613
	L5.CU	0.046	-0.303	0.348	0.137	-0.422*	0.558
	L10.CU	-0.313	-0.470**	0.157	-0.421	-0.723**	0.302
SECTOR 05	CU- Specification 1	1.644***	0.570***	1.078***	1.074***	0.225*	0.853***
	CU- Specification 2	0.958***	0.116	0.841**	0.883*	-0.030	0.912*
	L5.CU	0.535	-0.245	0.781*	0.447	-0.528***	0.974***
	L10.CU	0.754	-0.475***	1.229***	0.002	-0.756***	0.758
SECTOR 67	CU- Specification 1	1.704***	0.240*	1.464***	2.044***	0.405**	1.638***
	CU- Specification 2	-0.099	-0.948***	0.849*	0.087	-0.944**	1.031
	L5.CU	1.558***	0.505**	1.053**	1.809***	0.566**	1.243**
	L10.CU	0.412	-0.054	0.466	-0.256	-0.331	0.075
SECTOR 74	CU- Specification 1	0.318*	-0.066	0.384**	0.963***	-0.189	1.154***
	CU- Specification 2	0.019	-0.156	0.175	-0.094	-0.169	0.075
	L5.CU	0.113	-0.286*	0.398	0.406	-0.266**	0.672***
	L10.CU	0.213	-0.075	0.288	-0.257	-0.080	-0.177
SECTOR 04	CU- Specification 1	2.671***	0.605***	2.066***	2.692***	0.387*	2.305***
	CU- Specification 2	-0.598	-1.261*	0.662	-0.226	0.966	-1.192
	L5.CU	0.231	-0.701	0.932	0.972*	-0.192	1.164*
	L10.CU	-1.524***	-0.601	-0.923	-0.260	-0.696	0.436
SECTOR 65	CU- Specification 1	0.974***	0.039	0.936***	1.026***	-0.047	1.075***
	CU- Specification 2	0.247	-0.151	0.398	0.063	-1.022***	1.085**
	L5.CU	0.743***	-0.103	0.846***	0.153	-0.170	0.322
	L10.CU	-0.609**	-0.168	-0.441*	-0.231	-0.753***	0.521
SECTOR 99	CU- Specification 1	1.691***	0.147	1.544***	1.101***	-0.060	1.161***
	CU- Specification 2	0.798	0.339	0.460	1.174	-0.285	1.459
	L5.CU	0.084	-0.669*	0.753	0.502	-0.566	1.068
	L10.CU	0.137	-0.350	0.487	0.162	0.331	-0.169

Notes: ***, **, * indicate significance at 1%, 5% and 10%, respectively.

6. Conclusions

In order to analyse the effects of economic integration in Latin America on the extensive and intensive margins of trade, we follow the methodology introduced in BBF. The analysis is performed for all members of LAIA and their bilateral exports to a large group of trading partners over the period 1962-2009; and two different sub-periods, 1962-1989 and 1984-2009, are analysed.

Given the economic instability that characterises the group of the selected exporting countries, different periods of time should be taken into account in order to confirm whether the results over 1962-2009 can be generalised or dissimilar effects exist according to the period under consideration. Initially, this long period will allow us to determine whether different effects on trade margins might arise and, then, with the analysis for the two sub-periods, we will answer whether the effect of economic integration on trade margins is time sensitive. In particular, we are interested in the period after the proliferation of trade integration agreements and the deepening of the liberalisation process in the region. In addition, we distinguish the effects on different selected sectors that represent an average of one third of the exports in value from LAIA countries over the period 1962-2009.

The obtained results show that the effect of economic integration is time sensitive. The positive consequences of NRPTAs and PTAs were reflected by the diversification of goods (EM) only in the long-run and for sectors that belong to industrial manufactures. For the second sub-period, the main positive effects were reflected in the intensive margin for all different types of agreements, not only for primary goods and agricultural manufactures but also for industrial manufactures. Moreover, in line with previous research, we find that deeper economic integration agreements have a greater effect on international trade.

The obtained results also show that it is important to take into account a long period in order to analyse differential "timing" and test whether positive effects are more persistent over time in trade margins. In this respect, the results show that the deepest EIAs (CUs) appear to promote the development of industrial manufactures in the long run. Therefore, we provide evidence in favour of the welfare gains of EIAs in Latin America, since regional integration is in line with the objectives of development and industrialisation.

With regard to strategic sectors, the obtained results show that the FTAs signed in the region have not had positive consequences in terms of trade margins in the division of road vehicles. For leather, leather manufactures and footwear the strongest positive effect on trade margins are for CUs on the IM, but only in the current period. Otherwise, the NRPTAs have fostered growth of this type of industrial manufactures to a greater extent on the EM in the long term.

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APPENDIX

Table A.1: Trade Agreements of LAIA Members and with other EIAs in 2009.

Name	Member Countries	Type of Agreement (BBF)[a]	Date of Entry into Force
Andean Community (CAN)	Bolivia, Colombia, Ecuador, Peru and Venezuela	CU	1995
CARICOM-Colombia	Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, Saint Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname and Trinidad and Tobago - COLOMBIA	PTA	1995
CARICOM-Venezuela	Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, Saint Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname and Trinidad and Tobago – VENEZUELA	PTA	1993
Central America – Chile	Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua -CHILE	FTA	2002
Cuba- LAIA (Cuba incorporation to LAIA)	Argentina, Bolivia, Brazil, Colombia, Chile, Ecuador, Mexico, Peru, Paraguay, Uruguay and Venezuela – CUBA	PTA	1999
European Free Trade Association (EFTA) - Chile	Norway, Iceland Switzerland, Liechtenstein – CHILE	FTA	2004
EFTA - Mexico	Norway, Iceland Switzerland Liechtenstein – MEXICO	FTA	2001
EU – Chile		FTA	2003
EU - Mexico		FTA	2000
Latin American Integration Association (LAIA)	Argentina, Bolivia, Brazil, Colombia, Chile, Ecuador, Mexico, Peru, Paraguay, Uruguay and Venezuela	PTA	1981
MERCOSUR – Chile	Argentina, Brazil, Uruguay and Paraguay – CHILE	FTA	1996

MERCOSUR- CAN	Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay – Peru Uruguay and Venezuela	FTA	2005
North American Free Trade Agreement (NAFTA)	Canada, Mexico and USA	FTA	1994
Northern Triangle – Mexico	El Salvador, Guatemala and Honduras – MEXICO	FTA	2001
Southern Common Market (MERCOSUR)	Argentina, Brazil, Paraguay and Uruguay	CU	1991
Trans-Pacific Strategic Economic Partnership (TPP)	Brunei, New Zealand and Singapore – CHILE	FTA	2007

Source: authors' elaboration using "Regional Trade Agreements" database from WTO and www.nd.edu/jbergstr/.

a. PTA: preferential trade agreement; FTA: free trade agreement and CU: customs unions.

Table A.2: Bilateral Trade Agreements of LAIA Members with Third Countries in 2009.

Name	Type of Agreement (BBF)[a]	Date of Entry into Force
Bolivia – Chile	FTA	1993
Bolivia – Mexico	FTA	1995
Canada - Chile	FTA	1997
Chile – China	FTA	2007
Chile – Colombia	FTA	2009
Chile - Costa Rica	FTA	2002
Chile - El Salvador	FTA	2002
Chile – Honduras	FTA	2008
Chile – India	PTA	2008
Chile – Japan	FTA	2008
Chile - Mexico	FTA	1999
Chile – Panama	FTA	2009
Chile - Republic Korea	FTA	2004
Chile - Peru	FTA	1998
Chile – Venezuela	FTA	1993
Chile - US	FTA	2004
Colombia - Mexico	FTA	1995
Costa Rica - Mexico	FTA	1995
Guatemala – Venezuela	PTA	1987
Israel - Mexico	FTA	2000
Japan - Mexico	PTA	2005
Mexico - Nicaragua	FTA	1998
Peru – USA	FTA	2009

Source: authors' elaboration using "Regional Trade Agreements" database from WTO and www.nd.edu/jbergstr/.
a. PTA: preferential trade agreement and FTA: free trade agreement.

Table A.3: Generalized System of Preferences in 2009.

Provider Country	LAIA Beneficiary Countries	Initial Entry into Force
Australia	All LAIA countries	1974
Belarus	Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay	2004
Canada	All LAIA countries	1974
European Union	Argentina, Bolivia, Brazil, Colombia,Ecuador, Mexico, Peru, Paraguay, Uruguay and Venezuela	1971
Iceland	Argentina, Brazil, Paraguay and Uruguay	2000
Japan	All LAIA countries	1971
Liechtenstein	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay and Venezuela	1972
New Zealand	All LAIA countries	1972
Norway	All LAIA countries	1971
Russia	All LAIA countries	1994
Switzerland	Argentina, Bolivia, Brazil, Ecuador,Paraguay, Uruguay and Venezuela	1972
Turkey	All LAIA countries	2002
US	Argentina,Brazil, Colombia, Ecuador,Paraguay, Uruguay and Venezuela	1976

Source: authors' elaboration using "Regional Trade Agreements" database from WTO and www.nd.edu/jbergstr/.

Table A.4: List of Destination Countries

Afghanistan	Dominican Rep.	Latvia	Seychelles
Albania	Ecuador	Lebanon	Sierra Leone
Algeria	Egypt	Liberia	Singapore
Angola	El Salvador	Libya	Slovakia
Argentina	Equatorial Guinea	Lithuania	Slovenia
Armenia	Estonia	Madagascar	Somalia
Australia	Ethiopia	Malawi	South Africa
Austria	Fiji	Malaysia	Spain
Azerbaijan	Finland	Mali	Sri Lanka
Bahamas	France	Malta	St. Kitts and Nevis
Bahrain	Gabon	Mauritania	Sudan
Bangladesh	Gambia	Mauritius	Suriname
Barbados	Georgia	Mexico	Sweden
Belarus	Germany	Mongolia	Switzerland
Belgium-Luxembourg	Ghana	Morocco	Syria
Belize	Greece	Mozambique	Taiwan
Benin	Greenland	Myanmar	Tajikistan
Bermuda	Guatemala	Nepal	Tanzania
Bolivia	Guinea	Netherlands Antilles	Thailand
Bosnia Herzegovina	Guinea Bissau	Netherlands	Togo
Brazil	Guyana	New Caledonia	Trinidad and Tobago
Bulgaria	Haiti	New Zealand	Tunisia
Burkina Faso	Honduras	Nicaragua	Turkey
Burundi	Hungary	Niger	Turkmenistan
Cambodia	Iceland	Nigeria	UK
Cameroon	India	Norway	USA
Canada	Indonesia	Oman	Uganda
Central African Rep.	Iran	Pakistan	Ukraine
Chad	Iraq	Panama	Un. Arab Emirates
Chile	Ireland	Papua New Guinea	Uruguay
China	Israel	Paraguay	Uzbekistan
China HK SAR	Italy	Peru	Venezuela
China MC SAR	Jamaica	Philippines	Vietnam
Colombia	Japan	Poland	Zambia
Costa Rica	Jordan	Portugal	Zimbabwe
Croatia	Kazakhstan	Qatar	
Cuba	Kenya	Romania	
Cyprus	Kiribati	Russian Fed.	
Czech Rep.	Korea Rep.	Rwanda	
Czechoslovakia	Kuwait	Samoa	
Denmark	Kyrgyzstan	Saudi Arabia	
Djibouti	Lao People's Dem. Rep.	Senegal	

Table A.5. Selected Sectors: 1962-2009

SITC2	Description	Number of observations	Participation in the number of observations (%)	Participation in the value of exports (%)
78	Road vehicles (incl. air cushion vehicles)	37,172	1.85	8.47
77	Electrical machinery, apparatus and appliances n.e.s.	81,889	4.07	5.33
68	Non-ferrous metals	31,133	1.55	4.76
05	Vegetables and fruit	79,162	3.94	3.80
67	Iron and steel	58,628	2.92	3.17
74	General industrial machinery and equipment and parts n.e.s.	92,717	4.61	2.01
04	Cereals and cereal preparations	30,902	1.54	1.65
65	Textile yarn, fabrics, made-up articles and related products n.e.s.	102,170	5.08	1.21
61	Leather, leather manufactures, n.e.s. and dressed fur skins	30,278	1.51	0.81
85	Footwear	8,321	0.41	0.68
	Total	569,162	28.3	33.07

A.6. Figures: Share of Different Integration Levels for Selected Goods.

Figure 1: EIA = 0

Figure 2: EIA = 1

Figure 3: EIA = 2

Figure 4: EIA = 3

Figure 5: EIA = 4

Cereals and cereal preparation

Vegetables and fruit

Fixed vegetable oils and fats

Figure 6: EIA = 0

Figure 7: EIA = 1

Figure 8: EIA = 2

Figure 9: EIA = 3

Figure 10: EIA = 4

Textile yarn, fabrics, made-up articles and related products

Iron and steel

Non-ferrous metals

Figure 11: EIA = 0

Figure 12: EIA = 1

Figure 13: EIA = 2

Figure 14: EIA = 3

Figure 15: EIA = 4

General industrial machinery and equipment and parts

Electrical machinery, apparatus and appliances

Road vehicles (incl. air cushion vehicles)

Leather, leather manufactures, n.e.s. and dressed furskins and footwear.

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