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South-South Regional Trade Agreements and Growth. A Panel Data Approach to the Evaluation of Three Latin American Trade Agreements

Alessia Lo Turco

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This study represents the evaluation of the effects of three Latin American trade agreements on growth for the countries involved. The use of a longitudinal data set allows for a new approach to the topic: under specific assumptions, the experience of a group of countries unaffected by the policy intervention will represent what the countries affected would have experienced, had they not negotiated the agreement. This provides the basic piece of information needed for the evaluation of any policy change.
The results are in general supportive of the widespread distrust in the agreements among small and developing states, expressed by most of the existing literature.

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1 Introduction

One of the most interesting developments in international economic relations is the increasing number of Regional Trade Agreements (RTAs) notified to the General Agreement on Tariffs and Trade (GATT)/World Trade Organization (WTO) during the nineties.
In the general frame of globalization in the exchanges ruled by the GATT/ WTO Treaty and, above all, by the Most Favored Nation principle, the article XXIV of the GATT allows for the possibility of the formation of Regional Trade Agreements among subgroups of Countries. These are allowed as long as they concern "substantially all trade" among the Countries involved, and do not cause external tariffs to "be higher or more restrictive" than before.
RTAs can be divided into several categories according to the different degree of integration they bring about. A Preferential Trade Area (PTA), for example, is characterized by the fact that tariffs among members are only reduced, while in a Free Trade Area (FTA) tariffs are completely eliminated, although every member Country maintains its own external tariff. A Customs Union (CU), instead, is a FTA where members Countries adopt a Common External Tariff (CET). A Common Market (CM) is a CU where the free movement of goods, services and factors of production between member states is allowed. Finally, an Economic and Monetary Union represents the deepest degree of integration: already sharing the benefits of a CM, the partners agree on the adoption of a common currency and the coordination of their economic poli-

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cies . By "Regionalism" is meant the formation of such trade blocs, although in the reality of today's agreements it is not always possible to have a perfect correspondence between the existing agreements and the categories shown above.
The regional phenomenon already existed before the negotiation of GATT art. XXIV in 1947, but after this date it has become more and more relevant. After the formation of the European Economic Community in the 50s, during the 60s and 70s a large number of agreements were signed among small and developing countries who wanted to foster their development. The main feature of this kind of agreements was that they reproduced at a supernational level the Import Substitution Industrialization strategy that domestic governments were already experimenting at home. For this reason the regional integration of the 60s and 70s has been called "Closed Regionalism" and has proved to be unsuccessful in fostering the development of the Countries involved. Despite the poor performance of the so-called South-South Agreements , many of them have been renewed in the nineties and many new ones have been negotiated.
The "new generation" of South-South agreements is characterized by the awareness that, in order to work, integration needs to be a real fact and not a virtual possibility: there is no improvement if tariffs are eliminated but Non-Tariff Barriers (NTBs) are kept because this results in segmenting the markets and impeding the free flow of goods and services. Moreover, the new South-South agreements move from the "closed regionalism" to a more open one: their specific concern is boosting international trade rather than controlling it.
The purpose of this work is, thus, investigating the effects of South-South agreements, namely their impact on growth.
The potential growth effects of a RTA often seem to be uppermost in the policy makers' minds, yet have received very little attention in the academic literature. In this frame, the work contributes to enrich the existing empirical literature in many respects. First, it specifically addresses the growth effects of RTAs through the use of a particularly suitable methodology for the evaluation of the policy intervention resulting in the formation of the RTA. Secondly, the availability of a preliminary version of the Penn World Tables (PWT) mark 6, with data for the period 1950-1998, gives the following work another feature that contributes in innovating the literature: the agreements under examination are three agreements negotiated in the 90s, namely the Andean Pact and the Central American Common Market renewed in 1991, and MerCoSur negotiated for the first time in 1991. Thus, the results will represent a first evaluation of the new generation of regional initiatives.
Finally the specific methodology used for this study is applied to the empiri-

cal analysis of the growth effects of RTAs for the first time; leaving the field of cross section growth regressions, the use of panel data allows for a methodology similar to the approach used when a natural experiment occurs (Meyer (1995)), i.e. when an exogenous event, such as a change in the government policy, changes the environment in which individuals, cities, etc. operate. The idea is that, in order to identify and evaluate the effect of an agreement, we need to know what the countries in the agreement would have achieved in its absence. Of course, this experience is not observable, so the empirical strategy will be to identify a group of countries, known as the control group, which, under specific assumptions, will provide information about the missing counterfactual. In other words, the experience of the control group after the formation of the agreement will tell us what the countries in the agreement would have experienced had they not undergone the agreement.
The work is divided into three sections: section one presents the history of integration in Latin America, a review of the literature on the impact of RTAs on growth and the specific contribution of the present work;
the second section represents the central part of the work dealing with the exposition of the empirical strategy and the model used to investigate the growth effects of RTAs; finally, a section on the policy implications and the conclusion follows.

2 Regional integration: the history and the literature

2.1 Regional integration in Latin America

The story of regional integration in Latin America starts in the 50s, after intra-regional trade had increased dramatically during the World War II (WWII). In this period, though, industrialization within the national boundaries had gone too far for integration to be a simple matter. By the early 60s all large and medium sized countries had an extensive range of industries with strong vertical integration, thus rationalization across countries could be achieved only through a complex system of compensation for losers and of reconciliation of conflicting interests, because of the reallocation of production brought about by economic integration. This meant commitment to planning and intervention, thus upsetting the expectations of those who believed in regional integration as a powerful tool for a double purpose: on one hand the enlargement of the market size and, on the other, the restoring a minimum of competition within Import Substitution Strategy for development. Another related problem was the weak position of the less developed

countries that feared they would lose out. Of course their interests could have been protected through appropriate negotiations, but this would have brought again an important role for the government.
The three integration initiatives in the 50s and 60s were the Central American Common Market (CACM), the Latin American Free Trade Area (LAFTA) and the Andean Pact.
The formation of the CACM can be traced back to the 50s, when the Central American Economic Cooperation committee was created by the Economic Commission for Latin America in 1951. The Committee drew up the Multilateral Treaty on Free trade and Economic Integration which was signed in 1958. This was followed by a more ambitious agreement between El Salvador, Guatemala, Honduras and Nicaragua in 1960 and later, in 1963, Costa Rica joined the agreement. So the CACM was an agreement on free trade in 95% of all goods, and called for the removal of all trade barriers among partners in 1966 and an agreement on a common external tariff. The CACM achieved important successes during the 60s, with the share of intra-CACM exports reaching 28% of total exports and 96% of manufactured exports in 1970. Since industrialization and integration occurred for the most part simultaneously, vested interests grew as a force in favor of intraregional trade. By contrast, intraregional trade actually declined in the rest of Latin America in the 50s and efforts to recover from this situation culminated in the Treaty of Montevideo in 1960 which initially was signed by seven Latin American countries and called for creation of a Latin American Free Trade Area, LAFTA, within 12 years. LAFTA members were to eliminate tariffs and other trade restrictions in annual rounds of negotiations, working within the general rules regulating economic integration agreements for the members of the GATT. LAFTA had anyway a very small period of success and after the end of the sixties negotiations stalled as elimination of trade barriers had reached the point where it hurt vested interests.
Trying to learn from LAFTA's difficulties in 1969 a group of countries established the Andean Pact. They were initially Bolivia, Chile, Colombia, Ecuador and Peru, but Chile left in 1973 while in this same year Venezuela joined. The pact was designed to work within LAFTA, rather than supersede it. In terms of levels of economic development, the Andean countries were relatively homogeneous relatively to the larger group and the Pact provided even stronger institutional settings which saw the constitution of an executive body, a clear schedule for trade liberalization, including the gradual establishment of a common external tariff. As in LAFTA however, an initial period of optimism over the Cartagena agreement in 1969 was soon overtaken by events and the trade flows among the five countries actually stayed unchanged until the end of the eighties. At this time, as a matter of fact, the five countries

decided to boost economic integration and to make the agreement work properly in order to create a common market as soon as possible. In 1989 the Andean Pact was renewed with the purpose of achieving the FTA in 1991. From this date the share of intraregional trade increased dramatically. Figure 1 shows the pattern of the ratio between intra-subregional and global imports and exports for the Andean Pact.

Figure 1 stresses how intra-subregional trade became relatively more import-

Figure 1: Andean intra-regional trade over global trade

ant in the nineties.Always in 1991, the Central American Common Market was renewed.

In 1991, a brand new treaty was negotiated among Argentina, Brazil, Paraguay and Uruguay: the Mercosur (Mercado Comune Del Sur).

This was hailed as the most important trade event of the nineties in Latin America. It meant the consolidation of the political distension of the relationship between Argentina and Brazil. Figure 2 shows, after 1991, the sharp growth of intra-subregional trade relative to global trade for the Mercosur subregion as a whole.Table 1, finally, shows the main trade agreements in Latin America, their timing and the countries involved. These are not the totality of the agreements into force in the area, though.

In the nineties, global trade grew in all Latin America, although intra-subregional trade played a relatively more important role in both the Andean and Mercosur regions.

Figures 3 and 4 show the evolution of each Andean country's share of intra-

Figure 2: Mercosur intra-regional trade over global trade

Table 1: Trade Agreements in Latin America

TRADE AGREEMENTS	COUNTRIES INVOLVED	original year of negotiation	year of renewal
LATIN AMERICA FREE TRADE AREA	Argentina, Brazil,Bolivia, Chile, Ecuador, Mexico, Paraguay, Peru, Uruguay,Venezuela	1959	1980
CENTRAL AMERICAN COMMON MARKET	Costarica, El Salvador,Guatemala, Honduras, Nicaragua	1958	1991
ANDEAN PACT	Bolivia, Colombia, Ecuador, Peru, Venezuela	1969	1989 with operative FTA in 1991
MERCOSUR	Argentina,Brazil,Paraguay, Uruguay	1991	

subregional imports and exports of the total subregional imports and exports. The pre-dominant role of Colombia and Venezuela is quite clear, especially on the export side. Figures 5 and 6 show the intra-subregional trade composition for the MerCoSur countries. On the export side, after the negotiation of the agreement in 1991 the Argentina and Brazil shares grew at the expenses of the other two countries, especially Paraguay. Paradoxically, it seems that the smaller partners exported more to the subregion before the agreement than after. Unfortunately, it was not possible to find data on the evolution of the ratio between intra and extra-subregional trade even for the CACM; nevertheless, according to the Inter-American Development Bank (IADB) reports (1995, 2000), intra-subregional trade grew in this area as well.

Figure 3: Andean export shares by country

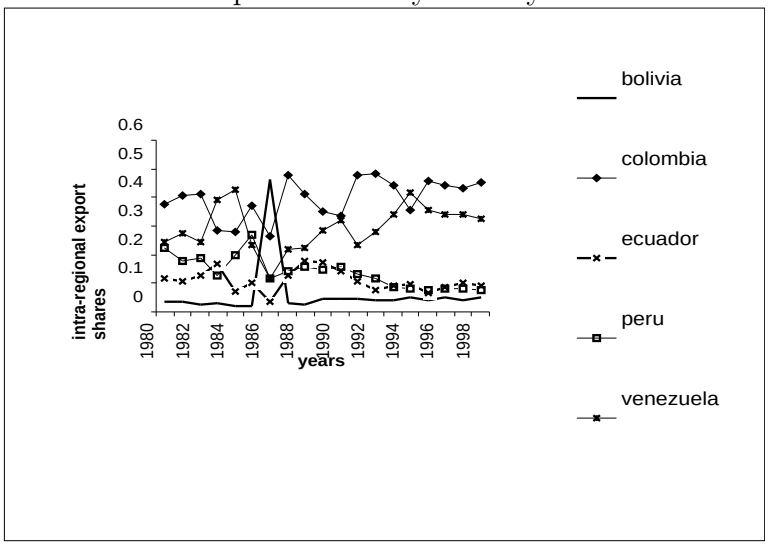


Figure 4: Andean import shares by country

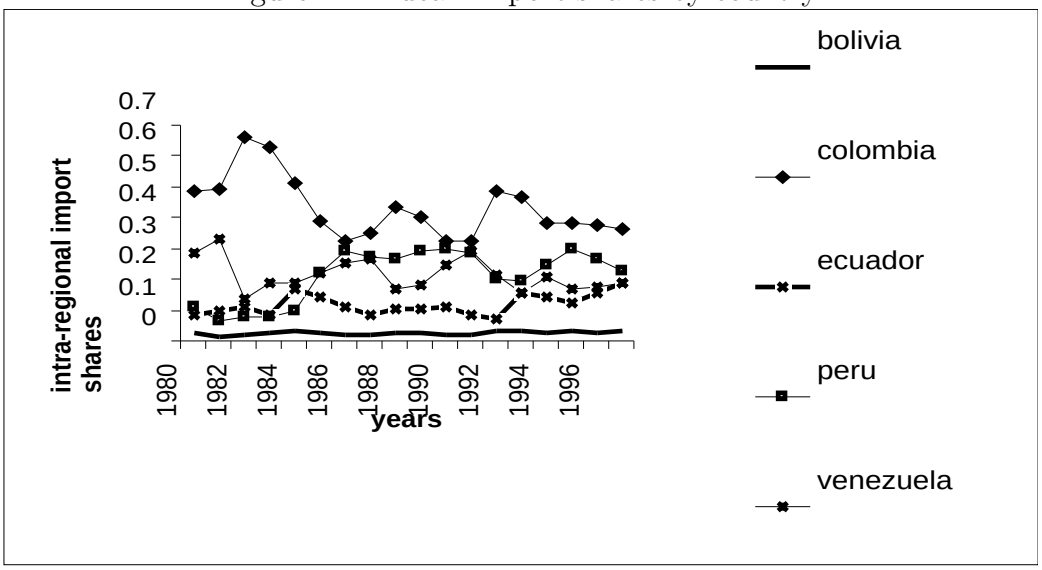


Figure 5: Mercosur export shares by country

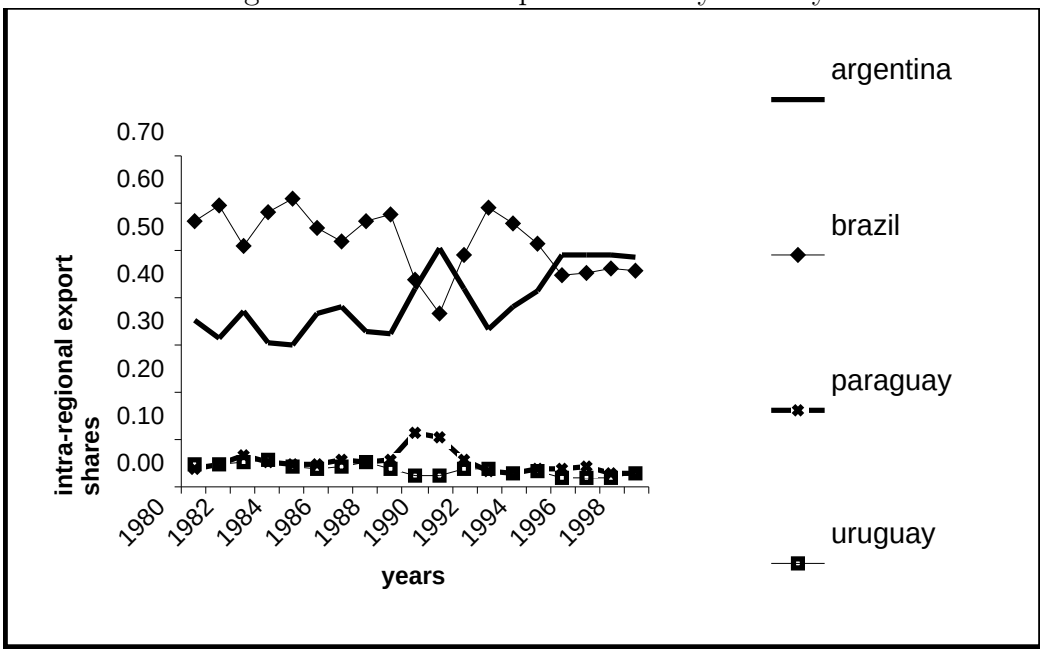
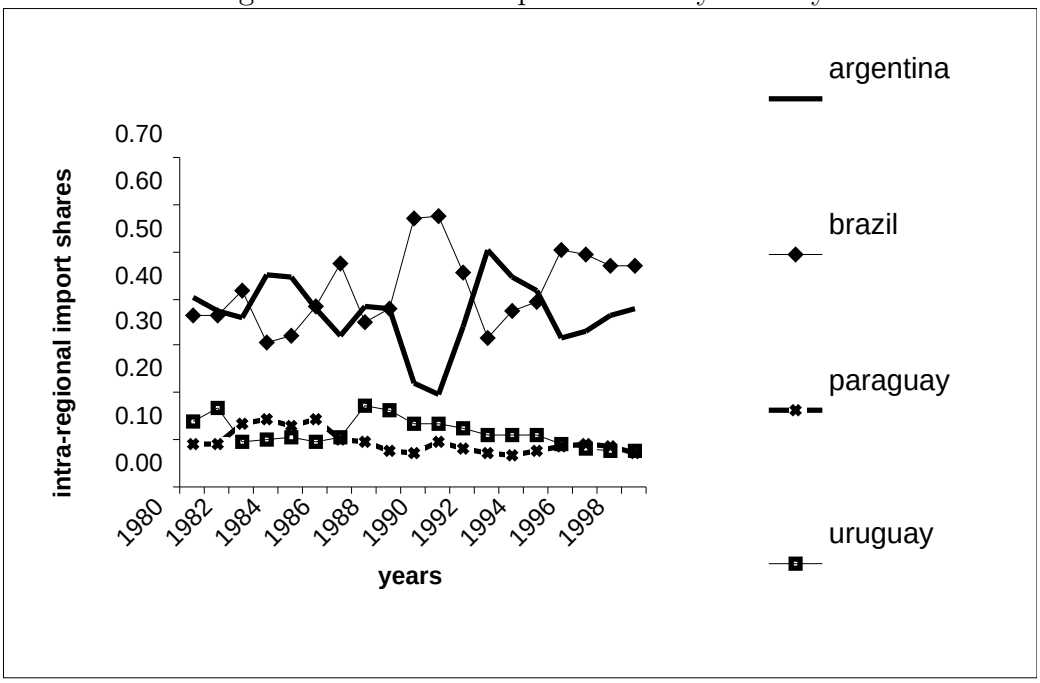


Figure 6: Mercosur import shares by country



2.2 Review of the literature on the impact of RIAs on growth.

A great attention in recent years has been given to the relation between trade policy and growth.
The most recent theoretical literature focuses on the channels through which free trade leads to faster growth (Grossman and Helpman (1991); Rivera-Batiz and Romer (1991)), and argues that benefits accrue to an industry and an economy through the economies of scale engendered by increased "trade knowledge"(Madani (1999)). This "trade knowledge" includes and can be modeled as gains from foreign R&D embodied in traded goods, technology transfer through trade or foreign direct investment, process innovation, best practice implementation, and imported intermediate goods variety and quality. Furthermore domestic human capital stock is built up due to exposure to new and more sophisticated intermediate and final goods.
The new growth literature, thus, suggests that a country which is more open to free trade will benefit from greater technological spillovers and, therefore, will experience faster growth than a country that is less open. This stream of theoretical literature, unfortunately, does not address specifically the issue of regional integration.

Should a country form or join an RTA or reduce trade barriers for all the countries? Free trade seems to be beneficial for growth, but what kind of free trade, regional or non discriminatory?
Since growth theory has not answered these important questions, empirical evidence on the impact of regional integration on growth may provide stylized facts and show the direction that future theoretical work should follow.
At the same time, despite the diffusion of RTAs, very little empirical work exists on their impact on growth compared to the vast empirical literature on the determinants of growth and the relation between openness and growth. Baldwin and Venables (1995) point out that the difficulty of the empirical evaluation of a Regional Integration Agreement (RIA) arises from the fact that the goal to reach is quite ambitious: the aim is to shed some light on the effect of the policy change, although it is very hard to disentangle the effect of the RIA from other changes in the economy. The drawback of econometric evaluation of the RIA is that, although it can be appraised with standard statistical criteria, it cannot capture the complicated interplay of effects which may be important in massive policy changes . Usually, the growth regressions estimate simple linear growth models using a variety of explanatory variables, including dummies or proxies for regional integration. The parameters are estimated on cross country or time series data for a single nation. Some studies draw their conclusions from the sign and the significance of the RIA's proxy and others use their estimated coefficients and the actual changes in the RIA proxies to quantify the growth effects. The results in general suggest a positive effect of some RIAs above all in Europe. For example Coe and Moghadam (1993) (see Baldwin and Venables (1995)), using French time series data test for cointegration among non farmer GDP, labour, physical capital, other variables and a proxy for the integration agreement, defined as the ratio of intra EU trade to GDP. Their conclusion is that 0. 3% of the French annual growth rate from 1984 to 1991 was attributable to EC integration . In contrast De Melo, Panagariya and Rodrick (1992) find that RIAs have no growth effects. Using OLS on Cross-Sectional Data, they estimate a linear regression of income growth rates with dummies for six RIAs, they find that the only significant dummy coefficient is the one for the South African CU, which by the way is positive, but in any case the authors' conclusions suggest that the effect of the agreement on growth can be considered negligible. Another study by De Melo, Montenegro and Panagariya (1993) would confirm the statistical insignificance of the RIA dummies. This result is confirmed by Vamvakidis (1998) who, using a Cross Section Data set for the decades 1970-1990, finds that, although the presence of more developed neighbours has a positive effect on growth, the RIA's dummy is significant only in the case of the European Union . However, once he controls for open-

ness, even the dummy for EU becomes statistically insignificant.Moreover, Vamvakidis(1999), explores the growth effects of non-European RIAs using Panel Data. he finds strong evidence that nondiscriminatory liberalizations boosted growth and that discriminatory ones did not. Unfortunaltely he did not deal with the "new-generation" of RIAs because of the shorth data set. Finally, a recent paper by Dorsati Madani (1999) investigates how the adherence to the Andean Pact affects industrial growth in Ecuador, Colombia and Bolivia: at a disaggregate level, this work shows that the industrial growth in the poorer countries of the agreement seems to be threatened by the adherence to the agreement. The period under examination is the last decade, i.e. the period immediately after the renewal of the treaty in 1989. Using Panel Data, the author measures the impact of the agreement by a dummy variable that takes the value of one from 1991. The dummy turns out to be not significant at all, though significant is the proxy the author builds up for the Agreement.
According to Baldwin and Venables, the bulk of the empirical analysis that tries to uncover the effects of the agreement using the traditional Cross Section growth regressions is far from mature for the following reasons: first OLS is in general an inappropriate estimator because of the endogeneity of many of the regressors ; second, growth regressions cannot capture the investment creation effect that follows the formation of a trade agreement; third, these regressions cannot establish causality, i.e. it could be that purely domestic factors drive growth and exports separately so that the coefficient on the RIA proxies or dummies reflect only a spurious correlation. The first point of their critics finds an echo in a very recent survey on the empirical literature on growth. Here Temple (1999) exposes all the pitfalls of the use of OLS in cross countries studies. The problems that seem to be most relevant are concerned with two sources of inconsistency for the OLS estimator. The first arises from the incapability of cross section regressions to deal with the unobservable time invariant country specific variables and the second from the endogeneity of some regressors. As a consequence, in the recent empirical literature on growth, a way to overcome these problems has been the use of Panel Data that gives a way to control for unobservable country specific time invariant characteristics and to solve the problem of the endogenous regressors using the endogenous regressors' own lags as instruments for them.

2.3 Contribution of the present work to the existing literature.

It is important to point out how the present work is related to the above presented empirical literature. As far as the evaluation of the impact of RIAs on growth is concerned, this work represents an attempt to answer to Venables and Baldwin's three main criticisms to the existing literature.
First, the choice of Panel Data allows for more flexibility in the estimation technique: the use of pooled OLS on time demeaned variables (the so-called Within Group Estimator) will allow us to control for any endogeneity coming via the correlation between the explanatory variables and the unobservable country specific time invariant effects.
Second, the use of Panel Data gives the opportunity to draw information from the time series variation apart from the cross sectional one: in this way we are able to capture the dynamics in investment and trade flows that are caused by the agreement and that in a cross section growth regression, that uses average of the variables across the time, can never be captured.
Third, although it is difficult to provide a proof of causality, the methodology that will be further properly explained and used is specifically addressed to disentangle the role of the agreement from other phenomenon that could have an impact on growth in the same period the policy intervention takes place.

3 Empirical strategy and results

This section will present the data description, the empirical strategy, the model and the estimation technique and results, thus trying to shed some light on the impact of the negotiation of the agreements on growth.

3.1 Data description.

The sample under analysis is made up of twenty Latin American Countries and the period under observation is the period between 1960 and 1998. The availability of the preliminary version of the Penn World Tables (PWT) 6, allows for a larger span of time thus permitting a first evaluation of the agreements formed or renewed in the 90s.
The following analysis is specifically concerned with the evaluation of the formation of MerCoSur, and the renewal of the Andean Pact and the Central American Common Market.
The dependent variable is the annual rate of growth of real GDP per worker and the explanatory variables included in the growth regression are the usual

ones, i.e. the share of investment over GDP, the growth of population, the mortality rate and the external debt. The secondary school enrollment is used as proxy for the level of human capital[1]. As a matter of fact, the negative sign on the coefficient for human capital found in the literature when Within transformation is used, is probably due to the fact that, while productivity growth declined over time, the school enrollment rates rose sharply in the last decades, (especially in developing countries), so, once the cross sectional variation is thrown away , this counterintuitive findings may simply reflect the omission of some other factors that may account for the growth slowdown. Other indicators, such as the Average Years of Schooling, seem to perform better, but unfortunately they were not available for the span of time 1960-1998 considered in this study.
Two indicators of openness have been used, the traditional trade share over GDP and a modified version of the Sachs and Warner indicator of openness. This last one is a binary variable taking value of one in the years the economy could be considered open and zero otherwise. Sachs and Warner define an economy as open according to five criteria:
1) the average tariff rate is less than 40%,
2) average Non Tariff Barriers (NTBs) cover less than 40% of total trade,
3) the black market premium is less than 20% of the official exchange rate,
4) there is no communism,
5) And there is no state of monopoly on major exports. Sachs and Warner indicator unfortunately accounted for openness only until 1992, so in the following analysis it has been assumed that a country which was open in 1992 went on being open until 1998 . All the variables are available in annual observations and come from the PWT 6 and the World Bank Development Indicators CD-Rom. For what concerns the mortality rate and the secondary school enrollment gross rate, annual observations were not available so interpolation was necessary in order to fill the gaps.

3.2 The empirical strategy

The empirical strategy for the following analysis is based on the idea that if economic integration causes a better (worse) growth performance for the countries involved in the agreement, then its negotiation should improve (worsen) the pattern of the rate of growth relative to what it would have been in its absence.
To implement this idea, though, we need to identify the group of countries

[1]We use this variable despite its bad performance when panel data estimators relying on the time-series variation of the data are used(De La Fuente et al. (2000))

affected by the agreement, and, after this, we need a piece of information on the growth these countries would have experienced, had they not undergone the specific agreement. To recover this unobservable counterfactual, the growth pattern pre and post-agreement of the group of the countries affected by it, has been compared to the growth pattern pre and post-agreement of another group, the "control group", made up of those countries that are not affected by it[2]. To read the experience of the control group as what the affected countries would have experienced in the absence of the agreement, we need to assume that, once controlled for the observable characteristics, the only difference between the two groups is the policy change brought about by the agreement. The empirical technique, in other words, replaces the unobservable outcomes of the affected group in the absence of the agreement with the observable one of the control group.
In order to implement this strategy, the first step is to define two dummies: a period dummy for the einforcement of the agreement, that is $D_t = 1$ from the year of the signinig of the agreement up to the final year of the sample,i.e. 1998, and $D_t = 0$ otherwise, and a group dummy $G_i = 1$ for the countries in the agreement and $G_i = 0$ otherwise.
The formal model, then, is

$$\Delta y_{it} = \alpha_0 + \beta_0 y_{it-1} + \alpha_1 D_t + \gamma_0 * D_t * G_i + \delta' x_i + a_i + u_{it} \qquad (1)$$

Δy_{it} is the annual rate of growth in period t for country i, on the right hand side there are the initial level of GDP, which checks for conditional convergence, and the other regressors x_{it}.
The above specification is similar to the models commonly used in the growth empirical literature (Barro and Sala-i-Martin (1995), Vamdakis (1998)). Some particular features of the above specifications, though, are worth to be stressed. First, the parameter of interest is the γ on the interaction term $D_t * G_i$: it disentangles the specific additional effect of the agreement on the countries involved. Its identification comes from the assumption that, ceteris paribus, the only difference between the pre and post-agreement periods for the affected countries is the negotiation of the agreement, in other words in the absence of the agreement γ would be zero. Second, the role of the time dummy Dt is to control for macro shocks, other than the policy change, that are common to all the countries in the sample. The coefficient on the time dummy summarizes the idea that both the agreement and the comparison

[2]As stated before there are 20 Latin American Countries in the sample. Among these 4 countries are involved in Mercosur, 5 in the Andean community and 5 in the Central American Common Market. Eventually the control group is made up of the remaining 6 countries. These are Chile, Guyana, Jamaica, Mexico, Panama and Trinidad y Tobago

Table 2:

COUNTRY GROUP/REGIME Model (1)	INTERCEPT
Agreement group before the agreement	α_0
Agreement group after the agreement	$\alpha_0 + \alpha_1 + \gamma_0$
Control group before the agreement	α_0
Control group after the agreement	$\alpha_0 + \alpha_1$

groups are influenced by time. Consequently, the different combinations of countries and regime will be Table 2

Third, the above specification is more flexible than the standard cross sectional one because it allows for a country specific time invariant effect α_i , wider than a simple group dummy, that picks up all those time constant unobservable country specific factors affecting the growth rate, at the same time u_{it} , the idiosyncratic error, represents unobserved factors that change over time and affect the rate of growth. The unobserved heterogeneity α_i is likely to be correlated with the regressors thus making pooled OLS biased and inconsistent, nevertheless, any estimation technique that wipes out the α_i will be enough to control for this source of correlation. Finally, the control group should be chosen such that, once controlled for the observable characteristics, the unaffected countries outcomes are what the affected ones would have been had they not entered the agreement, in other words, "selection occurs only on the observables" (Blundell and Costa Dias (2000)).

This basic assumption is quite strong if it is possible that countries decide to enter the agreement according to their forecast outcome. In other words, the problem of "endogenous selection" arises here: unlike in the natural experiment, where individuals are assigned to the "treatment" exogenously, here it is likely that a country signs a trade agreement according to the possible outcome it expects to achieve joining with other countries in the pact. Nevertheless, assuming that the unobservable characteristics affecting the participation decision are time invariant any estimation technique that wipes out the ai will solve the problem of the endogenous selection.

The choice of Within Group estimator, i.e. OLS on the time-demeaned data, will control for correlation between the country fixed effects and the regressors: its use for the estimation of (1), will control for the time invariant unobservable heterogeneity and the endogenous selection problems, allowing for the possibility that "selection occurs on the unobservables" , as long as these have a constant time series structure.

In (1), though, in order to control for the rate of convergence, the lagged de-

pendent variable is present on the right hand side. The correlation between the time mean of the lagged dependent variable and the time mean of the idiosyncratic error term causes inconsistency of Within Group estimator. Nevertheless, it can be proved that the Within Group estimator inconsistency is not a serious problem: the correlation between the time mean of the lagged dependent variable and the time mean of the idiosyncratic error term tends to disappear as T, the time span of the data set, grows larger. The approach just explained is equivalent to the difference-in-differences approach used for the evaluation of policy intervention when non-experimental data are used; the only difference is that instead of differencing the model here we take the deviation from the mean, but the outcome is equivalent.
Our purpose is to analyze the effect of three main agreements in Latin America: the Andean Pact, the Central American Common Market and the Mercosur. The countries involved in the three agreements do not exhaust the number of countries in our sample: six are the countries that do not undergo any of the agreements under analysis thus constituting our control group.
The timing of the agreements is as follows: the Andean Pact was signed in 1969 for the first time and then was renewed in 1989 with the FTA operating only from 1991; the Central American Common Market was signed in 1960 and then renewed in 1991, and Mercosur started operating in 1991. Our sample goes from 1960 up to 1998, so, according to the specification above, we will have two period dummies: the first will be equal to 1 from 1969 onwards and equal to 0 otherwise; the second will be equal to 1 from 1991 onwards and equal to 0 otherwise.
The group dummies will be three according to the three different groups of countries that constitute the three agreements, thus in total the interaction terms and consequently the parameters of interest will be four: the coefficient on the interaction between the period dummy for 1969-1998 and the Andean group dummy will measure the additional effect of the first negotiation of the Andean Pact on the rate of growth of the Andean countries; the coefficient on the interaction terms between the period dummy for 1991-1998 respectively with the Andean, MerCoSur and CACM group dummies will measure the additional effects of the three policy changes that occurred in 1991, i.e. the renewal of the Andean Pact and of the CACM and the negotiation of MerCoSur.

3.3 Basic results

Table 3, 4, 5 and 6 show the results of the estimation using Within Group estimator. The dependent variable in the first two tables is the growth rate of real GDP per worker, while in tables 5 and 6 is the growth rate of real GDP

per capita. Although the theoretical work on growth focuses on the growth of productivity, some empirical papers use the rate of growth of real GDP per capita as proxy for the growth of productivity. In order to check if the results obtained depend on the measure adopted for the rate of growth, we repeat the regressions using the growth rate of real GDP per capita as dependent variable. Graphs of the growth rates for all the countries in both definitions are shown in the appendix. Among the explanatory variables a period dummy for the 80s was added to account for the external debt crisis that in this decade affected many Latin American Countries. It is worth stressing that the coefficients on the interaction terms indicated as Andean69, Andean91, Cacm91 and MerCoSur in both sets of tables, measure the additional effect of the agreement on the average growth of the countries involved in it, whereas, the coefficient on the time dummy measures what the change in the average growth rate would have been for the same countries in that same period, had the policy change not occurred. As stated before, this coefficient summarizes the idea that both agreement and comparison groups are affected by time. Before having a look at the tables is important to notice that in neoclassical growth models a change in a control or in an environmental variable affects the steady state level of output per effective worker and it's only through this that it affects the growth rate. Thus, the dummy variable indicating the agreement represents, according to the sign on the coefficient, a positive or a negative shift in the steady state level of GDP per capita and, consequentely a positive or a negative impact on the rate of growth. Starting from the first column of table 3, the first version of the Andean Pact is not significant, whereas the renewals of the Central American Common Market (CACM) and of the Andean Pact are respectively significant at the 10% and the 1% significance level. The sign on the coefficients is negative in both cases and this means that the average additional effect of both the agreements on the countries involved is negative causing the Andean and Cacm Countries to achieve an average rate of growth lower than the growth they would have achieved without the renewal of the pact. In this first specification both the period dummies for 1969-1998 and 1991-1998 are not significant. This means that the countries in the control group did not experience any secular shift in their average rate of growth with respect to the base period represented by the constant. In other words, if the Andean and CACM countries had not renewed the agreements, no secular shift would have affected their average rate of growth.

The only significant shift in the intercept term is the one represented by the period dummy for the 80s that represents a negative shift for all the countries in the sample. In column 2, when the investment share over GDP,

Table 3:

Variables	(1)	(2)	(3)	(4)	(5)
GDP_0	-.0633***[d]	-.0860***	-.0905***	-.0921***	-.1234***
	(.0145)	(.0150)	(.0155)	(.0157)	(.0174)
Andean69	-.0036	.0078	.0100	.0095	
	(.0103)	(.0101)	(.0102)	(.0102)	
Andean91	-.0395***	-.0374***	-.0299**	-.0303**	-.0350**
	(.0131)	(.0130)	(.0139)	(.0139)	(.0146)
Cacm91	-.0196*	-.0279***	-.0226*	-.0234*	-.0234*
	(.0115)	(.0117)	(.0124)	(.0125)	(.0132)
Mercosur	-0058	.0057	.0104	.0102	.0158
	(.0138)	(.0137)	(.0145)	(.0145)	(.0152)
Period dummy 69	.0107	.0163	.0161**	.0153**	
	(.0072)	(.0066)	(.0069)	(.0074)	
Period dummy80	-.0313***	-.0169***	-.0184***	-.0191***	-.0152*
	(.0057)	(.0062)	(.0062)	(.0067)	(.0083)
Period dummy 91	.0028	.0074	-.0017	-.0021	-.0041
	(.0095)	(.0100)	(.0114)	(.0129)	(.0136)
Inv. Share		.0547***	.0563***	.0567***	.0724***
		(.0094)	(.0093)	(.0093)	(.0118)
Pop. Growth		.0002	.0004	.0005	.0043
		(.0080)	(.0081)	(.0083)	(.0079)
Sec. School		-.0075	-.0088	-.0049	-.0089
		(0081)	(.0083)	(.0097)	(.0137)
Openness			.0175*	.0173	.0087
			(.0108)	(.0110)	(.0124)
Mortality Rate				.0019	-.0112
				(.0121)	(.0166)
External Debt					-.0020
					(.0057)
Const.	.6145***	.7025***	.6805***	.6747***	1.091***
	(.1342)	(.1290)	(.1353)	(.1521)	(.2212)
Num. of Obs.:	760	760	740	740	569
R. Sq.	0.1302	0.1821	0.1855	0.1849	0.2334
Adj.R sq.	0.0981	0.1484	0.1499	0.1480	0.1891

[a] Dependent variable real GDP per worker. In parenthesis robust s.e.s are shown.

[b] Data on External Debt are available only since 1970.

[c] The Sachs and Warner indicator was not available for Panama so this Country is not included and thus the overall number of observations is smaller.

[d] * Significant at 10%; ** Significant at 5% ; *** Significant at 1%.

the secondary school enrolment gross rate and the population growth are added the two agreements are still significant. Only, the coefficients measuring the additional effects of the agreements slightly change altghough the additional impact is always negative for both the Andean Community and the Central American Common Market.The period dummies for 1969-1998 and 1991-1998 are not significant, so it is confirmed that, with respect to the base period, the countries under the agreements would have experienced no secular shift in their growth pattern, had they not renewed the agreements. Column three shows an important step of the analysis. As a matter of fact, the interaction term could pick up some common phenomenon different from the agreement common to the member countries that happened in the same span of time. In this specific case could pick up the process of global integration that occurred in the nineties. The Latin American countries, notoriously closed, started a fast and deep process of integration into the world economy in the very end of the eighties. As stated in the introduction, the new wave of regionalism is called "open regionalism" because the countries involved in regional integration, at the same time opened up themselves to the global integration. So, in order to account for this, a proxy for global integration was added to the previous specification. The first variable used to this end is the traditional indicator of openness: trade share over GDP. The results confirm the precedent findings although in this specification the period dummy for 1969-1998 is significant, implying that if the countries had not renewed the agreements, they would have experienced a positive secular shift in their steady state level od gdp per capita, like the countries in the control group. With respect to the base period, the renewal implied after 1991, for the Andean and Cacm countries a growth performance lower than the control group but higher than the performance they would have achieved if the sesecular shift had not occurred. The trade share over GDP is significant at the 10% significance level. The results appear to be robust even when the mortality rate and the external debt are added as explanatory variables although these are not significant. The first two columns of table 4 are exactly alike to columns 1 and 2 in table 3, whereas in the last three columns, instead of the trade share over GDP, the extended Sachs and Warner measure has been used as indicator of openness. The purpose of this is to check the robustness of the results presented in table 3

As stated before, tables 5 and 6 essentially represent the same previous regressions using as dependent variable the rate of growth of real GDP per capita.

The results are in general confirmed for the renewal of the CACM: this agree-

Table 4:

Variables	(1)	(2)	(3a)	(4a)	(5a)
GDP_0	-.0633***[d]	-.0860***	-.0838***	-.0853***	-.1154***
	(.0145)	(.0150)	(.0158)	(.0160)	(.0179)
Andean69	-.0036	.0078	.0116	.0112	
	(.0103)	(.0101)	(.0104)	(.0104)	
Andean91	-.0395***	-.0374***	-.0367***	-.0372***	-.0402***
	(.0131)	(.0130)	(.0140)	(.0140)	(.0145)
Cacm91	-.0196*	-.0279***	-.0301**	-.0309**	-.0308*
	(.0115)	(.0117)	(.0127)	(.0129)	(.0137)
Mercosur	-0058	.0057	.0023	.0018	.0064
	(.0138)	(.0137)	(.0151)	(.0154)	(.0161)
Period dummy 69	.0107	.0163	.0165**	.0158**	
	(.0072)	(.0066)	(.0069)	(.0075)	
Period dummy80	-.0313***	-.0169***	-.0187***	-.0190***	-.0151*
	(.0057)	(.0062)	(.0063)	(.0069)	(.0086)
Period dummy 91	.0028	.0074	-.0003	-.0007	-.0030
	(.0095)	(.0100)	(.0120)	(.0134)	(.0144)
Inv. Share		.0547***	.0567***	.0571***	.0737***
		(.0094)	(.0090)	(.0090)	(.0112)
Pop. Growth		.0002	.0004	.0005	.0036
		(.0080)	(.0081)	(.0083)	(.0079)
Sec. School		-.0075	-.0084	-.0040	-.0096
		(0081)	(.0083)	(.0098)	(.0138)
Sachs & Warner Openness			.0100	.0104	.0116
			(.0075)	(.0075)	(.0090)
Mortality Rate				.0033	-.0073
				(.0125)	(.0161)
External Debt					-.0013
					(1.015)
Const.	.6145***	.7025***	.6776***	.6628***	1.091***
	(.1342)	(.1290)	(.1353)	(.1521)	(.2212)
Num. of Obs.:	760	760	721	721	550
R. Sq.	0.1302	0.1821	0.1822	0.1816	0.2336
Adj.R sq.	0.0981	0.1484	0.1466	0.1448	0.1893

[a] Dependent variable real GDP per worker. In parenthesis robust s.e.s are shown.

[b] Data on External Debt are available only since 1970.

[c] The Sachs and Warner indicator was not available for Panama so this Country is not included and thus the overall number of observations is smaller.

[d] * Significant at 10%; ** Significant at 5% ; *** Significant at 1%.

Table 5:

Variables	(1)	(2)	(3a)	(4a)	(5a)
GDP_0	-.0641***[d]	-.0824***	-.0886***	-.0887***	-.1216***
	(.0141)	(.0151)	(.0159)	(.0160)	(.0171)
Andean69	-.0036	.0061	.0084	.0084	
	(.0099)	(.0097)	(.0098)	(.0098)	
Andean91	-.0118	-.0088	-.0003	-.0003	-.0003
	(.0117)	(.0116)	(.0126)	(.0126)	(.0132)
Cacm91	-.0195*	-.0289**	-.0239*	-.0240*	-.0227*
	(.0117)	(.0122)	(.0127)	(.0127)	(.0133)
Mercosur	.0146	.0239*	.0288**	.0289**	.0395***
	(.0127)	(.0127)	(.0133)	(.0134)	(.0142)
Period dummy 69	.0165**	.0201***	.0201***	.0200***	
	(.0072)	(.0064)	(.0066)	(.0070)	
Period dummy80	-.0271***	-.0141**	-.0154**	-.0156**	-.0107
	(.0058)	(.0062)	(.0062)	(.0066)	(.0081)
Period dummy 91	.0065	.0123	.0027	.0023	.0008
	(.010)	(.0103)	(.0114)	(.0128)	(.0135)
Inv. Share		.0493***	.0510***	.0510***	.0698***
		(.0093)	(.0093)	(.0093)	(.0117)
Pop. Growth		-.0012	-.0012	-.0012	.0024
		(.0081)	(.0082)	(.0084)	(.0080)
Sec. School		-.0054	-.0068	-.0071	-.0073
		(0080)	(.0082)	(.0087)	(.0120)
Openness			.0208**	.0207**	.0136
			(.0104)	(.0106)	(.0119)
Mortality Rate				-.0009	-.0118
				(.0117)	(.0160)
External Debt					-.0022
					(.0057)
Const.	.5459***	.5821***	.5574***	.5636***	.9314***
	(.1150)	(.1116)	(.1147)	(.1424)	(.2048)
Num. of Obs.:	760	760	740	740	569[b]
R.Sq.	0.1218	0.1655	0.1721	0.1721	0.2364
Adj.R sq.	0.0895	0.1311	0.1359	0.1346	0.1923

[a] Dependent variable real GDP per capita. In parenthesis robust s.e.s are shown.

[b] Data on External Debt are available only since 1970.

[c] The Sachs and Warner indicator was not available for Panama so this Country is not included and thus the overall number of observations is smaller.

[d] * Significant at 10%; ** Significant at 5% ; *** Significant at 1%.

Table 6:

Variables	(1)	(2)	(3a)	(4a)	(5a)
GDP_0	-.0641***[d]	-.0824***	-.0816***	-.0814***	-.1135***
	(.0141)	(.0151)	(.0155)	(.0158)	(.0169)
Andean69	-.0036	.0061	.0103	.0104	
	(.0099)	(.0097)	(.0100)	(.0099)	
Andean91	-.0118	-.0088	-.0081	-.0081	-.0063
	(.0117)	(.0116)	(.0127)	(.0128)	(.0133)
Cacm91	-.0195*	-.0289**	-.0314**	-.0314**	-.0302**
	(.0117)	(.0122)	(.0132)	(.0132)	(.0139)
Mercosur	-0146	.0239*	.0204	.0201	.0299**
	(.0127)	(.0127)	(.0141)	(.0143)	(.0152)
Period dummy 69	.0165**	.0201***	.0208	.0209***	
	(.0070)	(.0064)	(.0067)	(.0072)	
Period dummy80	-.0271***	-.0141**	-.0158**	-.0156**	-.0108
	(.0058)	(.0062)	(.0062)	(.0068)	(.0084)
Period dummy 91	.0065	.0123	.0037	-.0042	-.0016
	(.010)	(.0103)	(.0121)	(.0134)	(.0144)
Inv. Share		.0493***	.0517***	.0517***	.0718***
		(.0093)	(.0090)	(.0091)	(.0112)
Pop. Growth		-.0012	-.0008	-.0008	.0021
		(.0081)	(.0082)	(.0083)	(.0080)
Sec. School		-.0054	-.0062	-.0059	-.0075
		(0080)	(.0081)	(.0087)	(.0119)
Sachs & Warner Openness			.0118*	.0120*	.0124
			(.0066)	(.0071)	(.0086)
Mortality Rate				.0010	-.0078
				(.0124)	(.0154)
External Debt					-.0015
					(.0058)
Const.	.5459***	.5821***	.5668***	.5620***	.8771***
	(.1150)	(.1116)	(.1157)	(.1459)	(.1989)
Num. of Obs.:	760	760	721	721[c]	550[bc]
R. Sq.	0.1218	0.1655	0.1680	0.1680	0.2367
Adj.R sq.	0.0895	0.1311	0.1306	0.1306	0.1925

[a] Dependent variable real GDP per capita. In parenthesis robust s.e.s are shown.

[b] Data on External Debt are available only since 1970.

[c] The Sachs and Warner indicator was not available for Panama so this Country is not included and thus the overall number of observations is smaller.

[d] * Significant at 10%; ** Significant at 5% ; *** Significant at 1%.

ment seems to have caused the countries involved in it a growth lower than what they could have achieved without the agreement. On the other hand the renewal of the Andean pact is not significant at all in any of the specifications, while MerCoSur appears to be significant, apart from the specifications of columns 3a and 4a of table 6 where the Sachs and Warner extended measure of openness is used. This is probably due to the wide definition of the Sachs and Warner indicator: it picks up many aspects of economic integration thus it is likely that it absorbs the significance of the dummy for the agreement. The period dummy for 1969-1998 is always significant. The dummy for the 80s, that represented the so-called lost decade for Latin America, is always significant apart from the regressions where the external debt is added as explanatory variable. It is interesting to notice that the estimates of the coefficient on this dummy are more or less the same in all the specifications: the lost decade implied for the countries in the sample a growth lower than the base period.
Going back to the evaluation of the policy intervention represented by the agreements, tables 5 and 6 show that in general, MerCoSur seems to have had a positive additional effect on the countries involved, implying the rate of growth to be higher than it would have been without it.

4 Final remarks

4.1 Policy implications

From the previous analysis, as expected the impact of the first version of the Andean Pact on growth is never statistically significant: this agreement belongs to the "Closed Regionalism" era, during which, trade flows among the member countries were not free. As result, the effects of economic integration could not take place.
Its renewal in 1991, instead, seems to have negatively affected the growth possibilities of the five countries involved, at least up to 1998.
The negative impact of the Pact on the rate of growth of real GDP per worker seems to be the echo of the findings in Madani (1998) concerning the possibility of poor gains in terms of scale and competition effects for the smaller and poorer countries in the agreement. The Inter America Development Bank's (IADB) report on the Andean Pact for 1995 underscored the dominant position of the Venezuelan -Colombian trade within the Andean Sub-region in that period and, at the same time, expressed worries for Ecuador's export dramatic decline. It is likely that, if Colombia and Venezuela had not such a predominant position in the sub-regional trade, the smaller partners could

have achieved a better growth performance in the 90s. In other words, it is possible that this experience of discriminatory trade liberalisation has given worse results than the ones achievable under non discriminatory trade liberalization.
The results obtained for the CACM countries suggest a negative impact of the renewal of the agreement on growth. This outcome is probably due to the realisation of a virtual integration: after 1991, the members have done very little effort to integrate their markets and, as a consequence, their trade relations with countries outside the agreement stayed substantially unchanged. Protectionism and other distortions seem to have affected integration among the member countries, and do not let the forces of competition and scale effect operate.
Finally MerCoSur, seems to have fostered growth.
The results drawn from the previous analysis seem to be rather in line with the existing literature and the main theoretical predictions on the effects of South-South Trade Agreements.
Even if trade agreements effects depend on the different institutional and geographical setting and may even differ across time periods, this work seem to suggest that for small and developing states, at least for the one considered here, the formation of agreements with other small and poor states can be dangerous.
Firstly, the fragile economic situation that affects these countries can lead them to realise a fake regional integration. The protection of domestic vested interests turns out to be fundamental when the economic domestic structure is weak. Secondly, the relocation of production that follows the agreements seems to put the mechanisms indicated by the theory(Venables 2000) into action: divergence in income per capita levels is very likely to happen. So probably the best thing for these countries could be negotiating agreements with more advanced economies. These agreements could foster growth through the transmission of advanced technologies to the poorer partners.
Before moving to the conclusion, a final remark on the methodology is necessary. From preliminary evidence, differences in results obtained using per worker and per capita data suggest that data quality might be poor in some cases. This aspect is currently being investigated.
Moreover, an alternative, possibly more efficient estimation of the model proposed in section 3 will bring us, for the future development and improvement of this research, to the use of GMM estimator for dynamic panel data models. This estimator seems to be the most advisable one to deal with growth regressions even because of its ability to deal with the possible endogeneity of some of the variables used as regressors.

4.2 Conclusion

The main aim of this work was to investigate the impact of South-South Agreements on growth.
This topic has been addressed through the use of a methodology that allows for the comparison of the experience of the countries affected by a policy change with the alternative experience of a comparison group. The latter under specific assumptions, represents what the experience of the "affected" countries would have been had the policy change not occurred.
The main results of the analysis show that the Andean Pact, CACM and MerCoSur have not improved dramatically the economic performance of the countries involved. Even if the results of this analysis cannot be generalised, it is maybe possible to confirm the suggestion, coming from other theoretical and empirical contributions, that trade agreements among small and developing states should probably be avoided in favour of agreements with more developed partners.
So an interesting possibility for a future research is the application of the methodology used in this work to the evaluation of North-South agreements. At the same time, since we deal with annual growth, the model specification could be improved accepting the suggestions in Islam (1995) and Lucchetti et al.(2000) in order to consider quinquennial growth thus avoiding the influence of economic cycle disturbances on the results.
Finally, another improvement for the present work could be the use of other indicators of openness suggested by the literature on openness and growth (Harrison (1999), Ciccone et al.(2002)), in order to improve the quality of the previous results.

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