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European integration: what lessons for other regions? The case of Latin America

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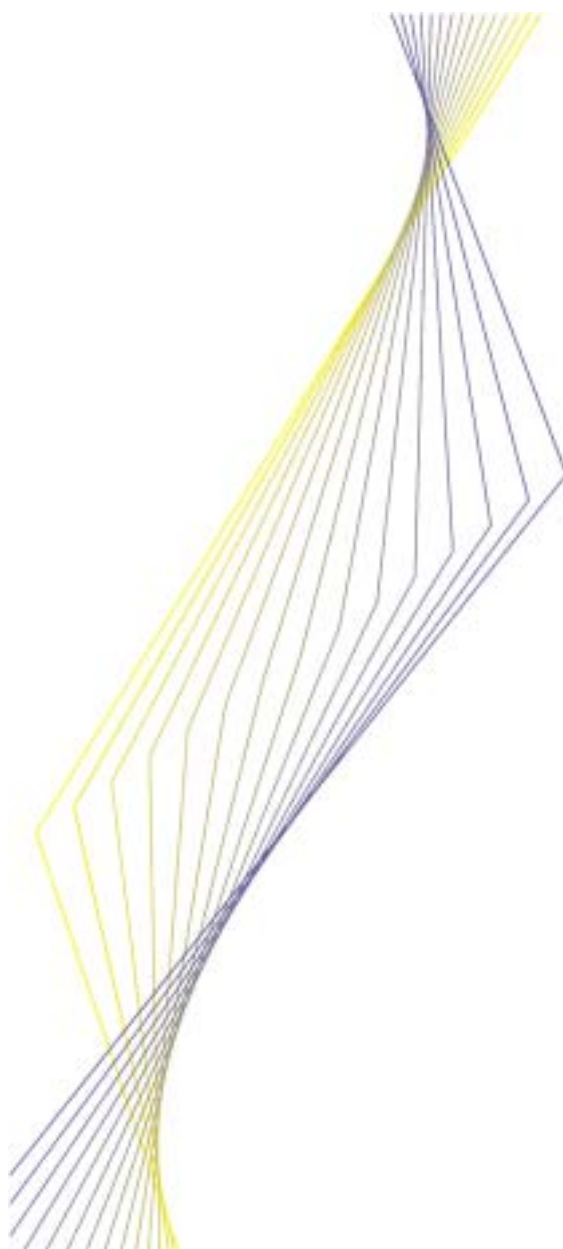
**EUROPEAN INTEGRATION:
WHAT LESSONS FOR OTHER
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LATIN AMERICA**

**BY ETTORE DORRUCCI,
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LATIN AMERICA¹**

**BY ETTORE DORRUCCI²,
STEFANO FIRPO³,
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October 2002

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Abstract

This paper tests for the hypothesis that institutional integration interacts with economic integration at the regional level. In particular, we ask what lessons can be drawn from the European experience with regional integration for Latin America. Several indicators of institutional and economic integration for both the EU and Latin America are presented. We find that Latin America is currently less economically integrated not only than the European Union today, but in some cases even than the EU at the beginning of its regional integration process. A cluster analysis illustrates that the link between institutional and economic integration has worked both ways throughout the whole EU experience. The more institutional integration went beyond the creation of a customs union and moved towards a common market and an economic and monetary union, the deeper economic integration turned out. Increasing economic integration in turn corroborated and sustained the process of institutional integration.

JEL classification: *[E42, F15, F33 and F41]*

Keywords: Regional integration in Europe and Latin America, intra-regional exchange rate variability

Non-Technical Summary

Latin American countries are currently confronted with two main options concerning their prospects for regional integration. The first option relates to the *choice of partners*. Costs and benefits of so-called “South-South” arrangements – i.e., intra-regional arrangements such as the Common Market of the South (Mercosur) – need to be compared with those of “North-South” arrangements – i.e., inter-regional arrangements such as the Free Trade Area of the Americas (FTAA). The second option, not mutually exclusive with the first, regards the *depth of integration*: the desirability of free trade arrangements has to be weighed vis-à-vis deeper forms of integration, such as a common market or even a monetary union at some point in time, which is likely to be more complex.

Assuming that deeper regional integration is one of the possible scenarios for Latin America, this paper asks what lessons can be drawn from the European experience that started in the 1950s. We contribute to this growing debate by testing the hypothesis that institutional integration has interacted with economic integration at a regional level. An original measure of *institutional integration* is developed and presented here. It comprises five main institutional stages: free trade area, custom unions, common market, economic union and total economic integration (in which some economic policies are conducted at the supranational level). *Economic integration* is captured by several measures of real, financial and monetary integration as also suggested by the optimum currency area (OCA) theory. They include measures of the synchronisation of the business cycle, convergence of inflation rates, exchange rate variability, trade openness and integration, convergence of interest rates, and income convergence.

The paper finds that Latin America currently fulfils these OCA criteria to a lesser extent than the European Union (EU) today, but in most cases even to a lesser extent than the EU in the 1960s and 1970s. By means of a cluster analysis the paper shows that the link between institutional and economic integration has worked both ways throughout the whole EU experience. The more institutional integration went beyond the creation of a customs union and moved towards a common market and an economic and monetary union, the deeper economic integration turned out. Increasing economic integration, in turn, corroborated and sustained the process of institutional integration.

The key lesson from the European experience that this paper draws for Latin America is, therefore, that intensifying regional institutional integration indeed plays an important role in deepening and accelerating the process of regional economic integration. The importance of deepening institutional integration for economic integration in Europe can be taken as a valuable example for the future path of integration in Latin America. However, it should be emphasised that each process of regional integration towards ever-advanced stages takes time and entails a strong, and sustained, political commitment. For example, monetary unification among several European countries has required more than 25 years from the first efforts of exchange rate stabilisation in the 1970s. An equally important lesson is that, while deeper economic integration calls for an effective institutional framework, the institutional development is in turn feasible only if the process of economic integration sustains it.

While the analysis in the paper may be extended in several ways, a few policy implications can already be drawn from the results of this paper. In particular, the European experience suggests that the currently modest level of economic integration in Latin America could be interpreted as an early stage of a process of deepening regional integration. In particular, such integration would be more likely to succeed in Latin America to the extent that realistic objectives are set in line with the current regional economic conditions and the prevailing level of political commitment. In this regard, the European experience shows that a concerted effort towards regional integration in Latin America may help create a sustainable, virtuous circle between deeper institutional and economic integration at the regional level.

1. Introduction

Latin American countries are currently confronted with two main options concerning their prospects for regional integration. The first option relates to the *choice of partners*. Costs and benefits of so-called “South-South” arrangements – i.e., intra-regional arrangements such as the Common Market of the South (Mercosur) – need to be compared with those of “North-South” arrangements – i.e., inter-regional arrangements such as the Free Trade Area of the Americas (FTAA). The second option regards the *depth of integration*: the desirability of free trade arrangements has to be weighed vis-à-vis deeper forms of integration, which are likely to be more costly and lengthy to undertake.

These two options -- i.e., the choice of partner and the depth of integration -- are not mutually exclusive, but may complement each other over time. As argued, for instance, in World Bank (2000) and Scandizzo (2002), North-South arrangements may be preferable if their objective is only the establishment of a free trade area¹, whereas South-South arrangements may bring substantial benefits provided that they pursue the liberalisation of factor movement, policy harmonisation and policy co-ordination.² For Latin America this would imply that, first, developing relations with partners in the region can go hand in hand with trade liberalisation vis-à-vis other parts of the world; and second, that regional integration could go beyond, or much beyond, trade liberalisation.³

The main goal of this paper is to test for the hypothesis that institutional integration interacts with economic integration at the regional level. In particular, we ask what lessons can be drawn from the European experience with regional integration for Latin America. We proceed by first measuring and comparing several indicators of institutional and economic integration for both the EU and Latin America. *Institutional integration* can be defined as the outcome of joint policy decisions designed to affect the depth and breadth of regional integration over time. The paper develops and presents an original measure of institutional integration, based on the classification of regional integration developed by Balassa (1961). *Economic integration* is captured by several measures of real, financial and monetary integration in a given region. In particular, we look at a number of variables suggested by the optimum currency area (OCA) theory. These include measures of the synchronisation of the business cycle, convergence of inflation rates, exchange rate variability, trade openness and integration, convergence of interest rates, and income convergence.

By employing a cluster analysis the paper then tackles a series of inter-related questions. How integrated are the economies within Europe and within Latin America? Can one identify homogenous groups of countries within regions? And if so, what makes countries within groups similar? How did *real* and *nominal* economic integration proceed over time?

To our knowledge, this approach -- based on the analysis of the relationship between institutional and economic integration -- is a rather novel one.⁴ In recent years a rich literature has examined different aspects of economic policies in the Latin American region. Calvo and Mendoza (1997) and Milesi-Ferretti and Razin (1997) have examined the sustainability of current accounts imbalances and fiscal policies in Latin American countries. Another branch of literature has focussed on the choice of exchange rate arrangements and the timing of monetary union in Latin America: see for example Eichengreen (1998), Berg, Borensztein and Mauro (2000), and Fratianni and Hauskrecht (2002). Alberola, Busián and Fernández de Lis (2002) discuss the links between economic integration, macroeconomic stability and structural reforms. García Herrero and Santillán (2002) assess and compare the degree of financial sector development across Latin American countries. Hochreiter,

¹ South-South free trade arrangements would in fact entail trade diversion from more efficient exporters outside the region to less efficient regional producers.

² South-South arrangements may benefit from deeper regional integration in terms of economies of scale, competition effects and improved resource allocation.

³ This view is currently mirrored both in Latin American countries' interest in pursuing trade agreements with the NAFTA and the EU, and in the final objectives of the various Latin American sub-regional arrangements.

⁴ Ben-David (1993) uses quite a similar approach, but he only focuses on the link between the timing of trade reform and income convergence among countries.

Schmidt-Hebbel and Winkler (2002) discuss the issue of the long-run sustainability of a monetary union in Latin America vis-à-vis the European experience.

As one would have expected, Latin America currently fulfils the optimum currency area (OCA) criteria to a lesser extent not only than the European Union (EU) today, but in some cases even than the EU at the beginning of its regional integration process.⁵ The cluster analysis shows that the link between institutional and economic integration has worked both ways throughout the whole EU experience. The more institutional integration went beyond the creation of a customs union and moved towards a common market and an economic and monetary union, the deeper economic integration turned out. Increasing economic integration in turn corroborated and sustained the process of institutional integration.

The paper is organised as follows. Section 2 presents the index of institutional regional integration describing, which describes the main stages of institutional co-operation among selected sub-groups of European and Latin American countries, each taken as a whole. Section 3 presents some selected indicators of economic integration, including some measures of exchange rate variability in the two regions. Section 4 conducts a cluster analysis addressing the questions spelled out above. Section 5 presents some concluding remarks.

2. An institutional index of regional integration for the European Union and Mercosur

We trace here the main stages of institutional integration by constructing an index of institutional regional integration for the EU. We then apply this index also to Mercosur.⁶ After explaining our methodology (in Section 2.1, but see also Appendix 1 for greater detail), we review the main indications that can be drawn from the progression of this index within the EU and Mercosur over time (Sections 2.2 and 2.3, respectively).

2.1 Methodology

In his seminal contribution, Balassa (1961) identified five main stages of regional integration⁷. Such stages can here be defined as the outcome of *policy decisions* taken by regional intergovernmental fora and/or supranational institutions in order to affect the depth and breadth of regional integration. In this section such decisions are considered *per se*, i.e. without analysing their actual impact on the degree of integration as measured by a number of economic variables. The index is then used in Section 4 to test for the hypothesis that institutional integration interacts with economic interdependence at regional level. Using examples drawn both from current regional arrangements in the world and from the EU experience, the five stages can be rephrased as in Table 1.

For the purposes of this paper, the overall degree of institutional integration achieved within a regional arrangement at a given point in time can be quantified by assigning values (“scores”) to the level of integration recorded, for each of these five stages, throughout the relevant period (in our case, 1957-2001 for the EU and 1991-2001 for Mercosur). This allows us to *measure*, and therefore compare, the EU and Mercosur in a relatively homogeneous way, although with some unavoidable degree of discretion and judgement, which should be taken into account as a general *caveat*.

Table 1. The five “Balassa” stages of regional integration

⁵ Fiscal dominance, insufficient trade integration and business cycle synchronisation, and weaknesses in the financial system are usually listed as crucial deficiencies. This type of conclusion can be found in most of the literature: among others, Bayoumi and Eichengreen (1994), Eichengreen (1998), Berg, Borensztein and Mauro (2000), and Belke and Gros (2002).

⁶ Mercosur members are Argentina, Brazil, Paraguay and Uruguay.

⁷ An ultimate step, which goes beyond the five stages identified in the Balassa’s contribution and is not discussed in this paper, is Political Union.

THE FIVE STAGES OF REGIONAL INTEGRATION	DEFINITION	SOME EXAMPLES
1. Free Trade Area (FTA)	An area where tariffs and quotas are abolished for imports from area members, which, however, retain national tariffs and quotas against third countries	<ul style="list-style-type: none"> - In 1992 ASEAN countries launched the ASEAN Free Trade Area (AFTA) plan. On 1 January 2002 six out of ten ASEAN countries reduced internal tariffs on most goods (so-called "Inclusion List") to levels ranging between zero and five percent. The whole ASEAN area is scheduled to become a fully-fledged free trade area in the coming years. - The USA, Canada and Mexico are in the process of completing a North-American FTA (NAFTA): many tariffs were eliminated already in 1994, with others being phased out over periods of 5 to 15 years
2. Customs Union (CU)	A FTA setting up common tariffs and quotas (if any) for trade with non-members	<ul style="list-style-type: none"> - European Economic Community since 1968 - The MERCOSUR aims at becoming a fully-fledged CU by 2006
3. Common Market (CM)	A CU abolishing non-tariff barriers to trade (product and services markets integration) as well as restrictions on factor movement (factor market integration)	<ul style="list-style-type: none"> - European Community since 1993 (establishment of the European Single Market). The CM was already set up as an objective under the Treaty of Rome - The Andean Community aims at becoming a common market by 2005
4. Economic Union (EUN)	A CM with a significant degree of co-ordination of national economic policies and/or harmonisation of relevant domestic laws	<ul style="list-style-type: none"> - European Union nowadays
5. Total Economic Integration (TEI)	An EUN with all relevant economic policies conducted at the supranational level, possibly in compliance with the principle of subsidiarity. To this aim, both supranational authorities and supranational laws need to be in place	<ul style="list-style-type: none"> - The euro area (i.e., 12 out of 15 countries of the European Union) can be currently classified somewhere between an EUN and a TEI. Supranational authorities and rule making were established already with the Treaty of Rome in 1957, and subsequently enhanced

We assign scores from 0 to 25 to the degree of regional integration achieved over time in the development of, respectively, a Free Trade Area/Customs Union (FTA/CU, considered jointly), a Common Market (CM), an Economic Union (EUN), and an area with Total Economic Integration (TEI). By summing up the scores achieved in each moment in time (we use monthly data), an index of institutional regional integration is obtained which can range between 0 (no economic integration at all) and 100 (full economic integration, including monetary and financial integration). Scores are assigned on the basis of the specific indicators and criteria presented in Appendix 1. Two general criteria should be here borne in mind. First, to the extent possible scores are not assigned on the basis of the year when a certain decision was *taken* (e.g. Treaty of Rome in 1957), but rather the year and month when such a decision started being actually *implemented* (e.g. lowering of EU-6 internal tariffs between 1959 and 1968). This implies that those projects which were never implemented (e.g. Werner Plan) are not taken into account. Second, especially in the European experience some Balassa stages tend to develop *in parallel*, which implies that in this case the term "stage" could be misleading. For instance, when it became a customs union (1968), EU-6 had already one fundamental characteristic of TEI, i.e. a number of supranational institutions and the structuring of integration through Community law. This entails that numbers can be assigned *in parallel* to each of the five stages (see Appendix 1).

The institutional index of regional integration is constructed for:

- (i) the EU-6 founding Member States taken as a whole (see Figure 1 and, for greater detail, Appendix 1);
- (ii) Mercosur taken as a whole (Figure 2 and Appendix 1).

The reason why we prefer using the composite index only for EU-6 instead of EU-15 is that the path followed by individual EU Member States in joining the EU has been quite heterogeneous over time.⁸ Each of these groupings or individual countries proceeded with its own speed and path in the process of integration with other partner countries⁹. This implies that a composite index for the EU-15, though feasible, would be more difficult to interpret than for EU-6.

The methodology used to build up the composite index for EU-6 is described in Appendix 1, where the criteria and indicators used to assign scores to each of the Balassa stages are illustrated. Appendix 1 also reports the specific scores given to each event in the process of regional integration (see Table A1.1), and, what is more important, summarises the analysis in a table providing an historical perspective (Table A1.2). This allows showing how the institutional index of regional integration evolved in the EU-6 area between 1957 and 2001 in a more analytical way than as shown in Figure 1. The same methodology has been used, *mutatis mutandis*, to construct the index for Mercosur taken as a whole (Table A1.3).

2.2 What does the institutional index of regional integration tell us with regard to the EU?

Figure 1, and also Table A1.2 in Appendix 1, outline the evolution of the composite index of institutional regional integration for EU-6 from 1957 to 2001. Two main features of the European process of integration emerge.

First, the EU/euro area¹⁰ obtains a score as high as 86 out of 100 at the end of 2001 (see Figure 1). The EU/euro area can indeed claim to have achieved, at the same time, a developed common market, strong policy co-ordination, a single monetary and exchange rate policy, and – which can be seen as a major requirement for the aforementioned achievements – supranational institutions and supranational laws enforced by the courts. If one used the EU as a yardstick to measure regional integration processes around the world, it would be expected that the other existing arrangements obtain a much lower score (see Section 2.3 as far as Mercosur is concerned). Nevertheless, even using, as we do, a model of integration both based on the principle of subsidiarity and not considering the ultimate stage of Political Union, the EU does not obtain the highest score possible. Further steps in the deepening of European regional integration can be envisaged especially in the areas of labour mobility, harmonisation of national structural policies (e.g. in the area of labour market flexibility), further deepening of integration in European capital markets, and co-ordination of those macroeconomic policies which are not unified.

Second, using EU-6 as the benchmark, we can distinguish three sub-periods in the process of regional integration (Figure 1). The *first period*, characterised by faster integration, proceeds from March 1957 (Treaty of Rome) to July 1968 (completion of the customs union). By that time more than

⁸ One should in fact distinguish among these country groupings or individual countries: EU-6 (i.e., BE, GE, FR, IT, LU, NL); Ireland (IE), which joined the EU in 1973; Denmark and United Kingdom (DK, UK), which also joined the EU in 1973; Greece (GR), which joined the EU in 1981; Spain and Portugal (ES, PT), which joined the EU in 1986; Austria and Finland (AU, FI), which joined the EU in 1995; and Sweden (SE), which also joined the EU in 1995.

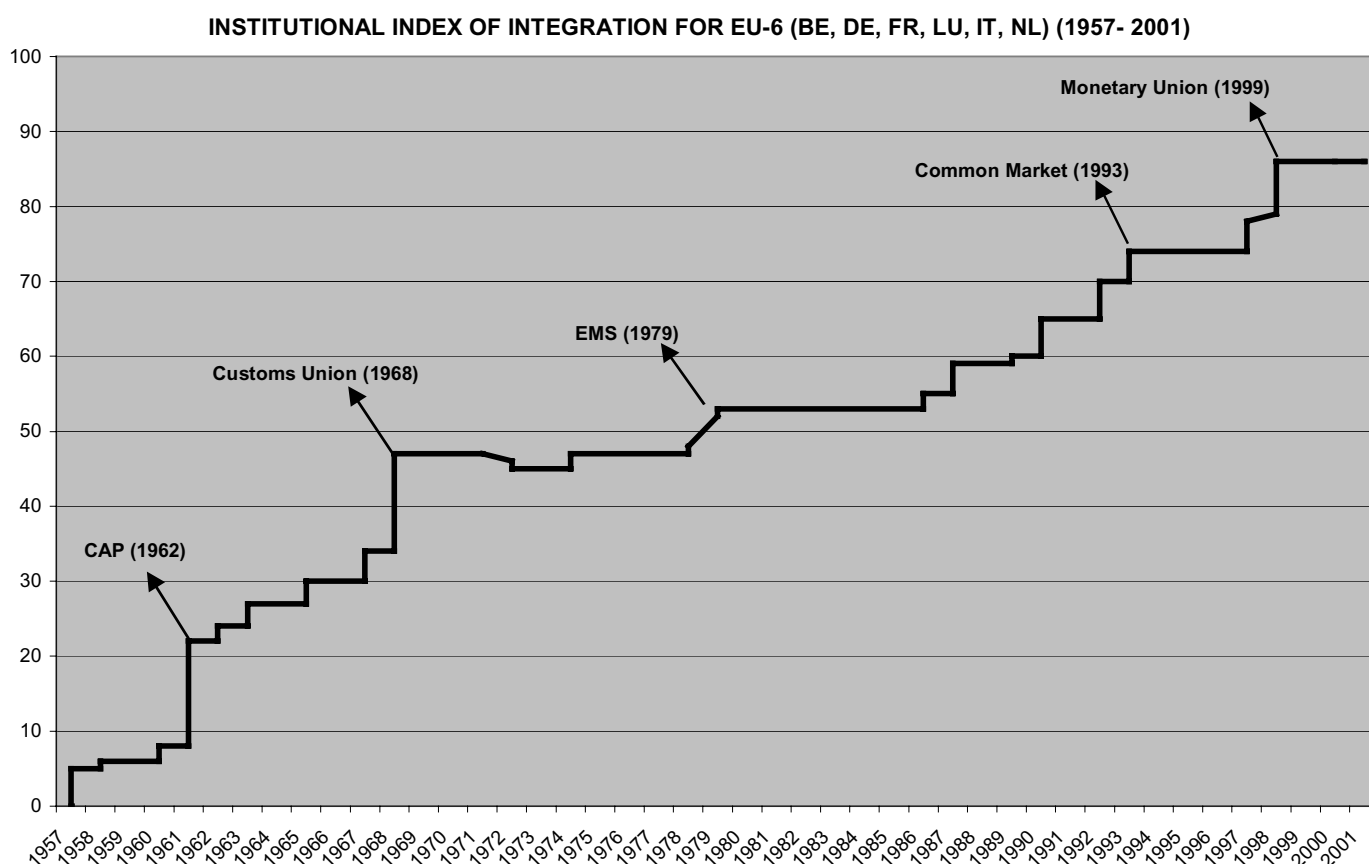
⁹ EU-6 countries followed a relatively homogeneous path. As regards the 9 remaining EU Member States, IE had implemented all measures to participate in the CU already by 1977, and became a member of the euro area in 1999. DK and UK also entered the customs union in 1977, but do not participate in EMU. DK, however, participates in the ERM II, which is not the case of UK. GR accomplished the transition to the CU in 1986, and adopted the euro in 2001. ES and PT became EU members in 1986, entered the CU only in 1995, and EMU in 1999. AU and FI became members of both the EU and the CU in the same year (1995), and adopted the euro in 1999. Finally, SE differs from AU and FI as it does not participate in EMU, but differently from DK and UK does not have an “opting-out” clause.

¹⁰ It should be noted that, since the adoption of the euro in 1999 (2001 for Greece), all 12 euro area Member States have reached the same level and follow the same path of institutional integration. This implies that since 1999 the groupings “EU-6” and “euro area” are equivalent in terms of score in Figure 1.

half of the overall institutional integration process had been already completed. In July 1968 the EU was indeed much more than a customs union, since it already had some genuine characteristics of subsequent Balassa stages (see Appendix 1, Table A1.2). The *second* period can be identified between the start of the 1970s and the mid-1980s, and is characterised by sluggish integration (so-called “euro-scepticism”), with the noteworthy exception of the EMS start in March 1979. Finally, in the *third*, most recent period a new, considerable acceleration in regional integration can be observed: as a result, the EU/euro area can currently be classified somewhere between an EUN and a TEI.

If the core proposition discussed in this paper is true – i.e., the proposition that regional *institutional* integration interacts with regional *economic* integration – one would expect that trends in EU economic integration between 1957 and 2001 follow a path similar to that we have tracked for institutional integration. This will be discussed in Section 4.

Figure 1



- N.B.: (1) EU-6 is here taken as a whole
 (2) 1957 = 0
 (3) Highest score possible for regional integration: 100

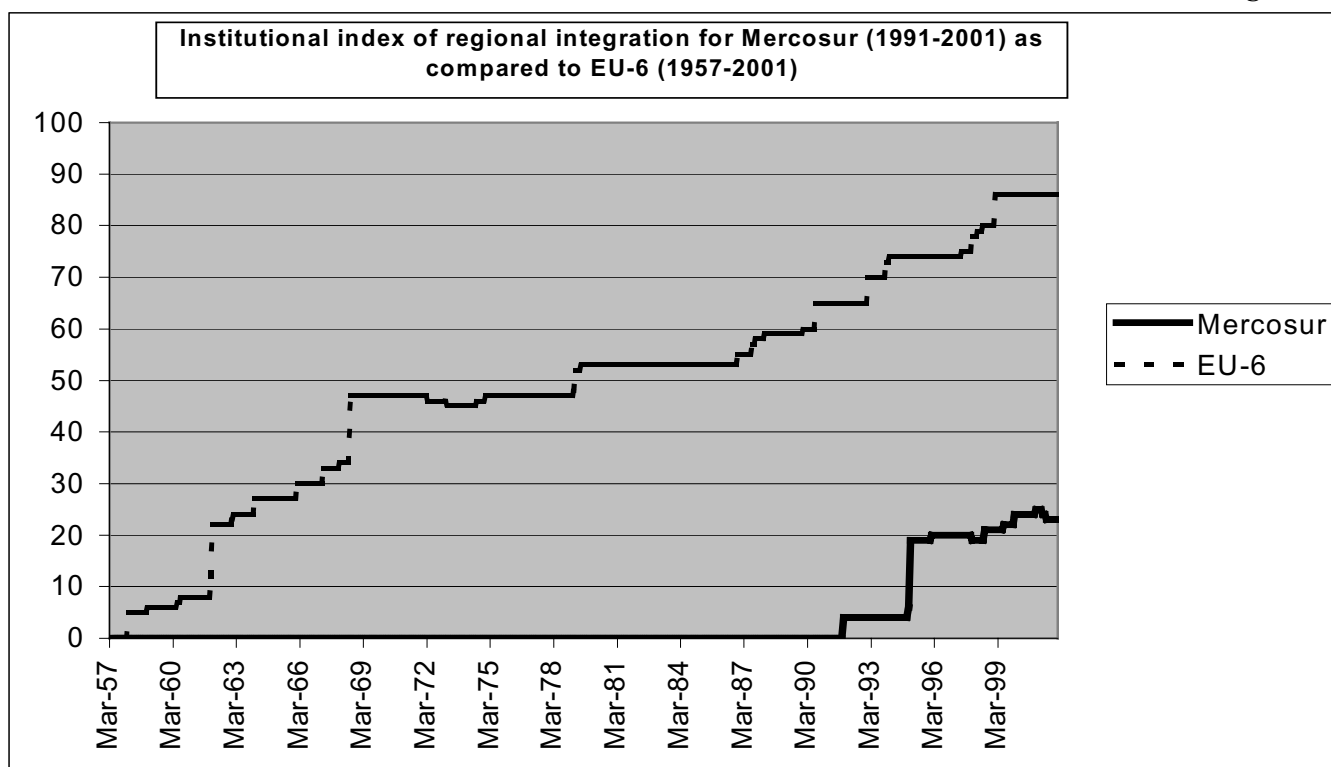
2.3 An application of the index to Mercosur

Since the early 1990s, a process of revitalisation and renewal of Latin American sub-regional integration¹¹ has accompanied the structural economic reforms being implemented in the countries of the region. Mercosur, created in 1991 by Argentina, Brazil, Paraguay and Uruguay, soon came to prominence for the economic area being developed in the Southern Cone of South America, with a population of over 220 million and a GDP in excess of USD 900 billion. Mercosur’s final objectives

¹¹ The process of regional integration in Latin America does not, in fact, start in the 1990s. Examples of regional integration in the earlier periods are the Cartagena Agreement founding the Andean Group (1969) and the Chaguaramas Treaty founding the Caribbean Community (1973).

are ambitious: to create a common market and to co-ordinate the economic policies of its member countries. Equally striking was the single-mindedness with which Mercosur pursued its objectives in the first half of the 1990s, which led to the satisfactory conclusion in December 1994 of what was known as the transition phase (see Appendix 1, Table A1.3). Partly as a result of these institutional developments (see Eichengreen (1998) for other explaining factors), the share of intra-regional trade in aggregate Mercosur exports rose throughout the decade, from 9% in 1990 to 25% in 1998 (see Section 3 for greater detail). Despite the uncertainty in and setbacks to the process of integration caused by the 1999 devaluation of the Brazilian real and the Argentine crisis since end-2000, Mercosur remains the core sub-regional arrangement in Latin America. It might be revitalised and deepened in the coming years, also as a result of a new wave of initiatives in the aftermath of the Argentine crisis.

Figure 2



- N.B.: (1) The four Mercosur member States and EU-6 are here taken as a whole
 (2) 1957 = 0
 (3) Highest score possible for regional integration: 100

Despite its achievements, Mercosur ranks much lower than the EU in terms of degree of regional integration, with an index accounting for 23 out of 100 at the end of 2001 (i.e., a score comparable to that achieved by EU-6 already in the mid-1960s). Using the EU as a yardstick, the index of institutional regional integration for Mercosur accounts for only one quarter of the EU index at the end of 2001 (see Figure 2 and Appendix 1, Table A1.3). This can be attributed not only to the “quantity” of integration – i.e., the fact that Mercosur obtains high scores only as a free trade area and a customs union – but also to its “quality”.

It is in the latter field – i.e., *how* the free trade area and customs union are actually implemented – that Mercosur might consider drawing some lessons from the European experience. First, differently from the EU, Mercosur countries not only can still keep their own tariffs for a list of exempted goods, but are empowered to *withdraw from their commitments* as both the Brazilian and Argentine experiences confirm. This reversibility is among the main reason why Mercosur still ranks below the EU of 1968 as a FTA/CU. Second, the Mercosur treaty is *intergovernmental in nature*, not supranational (see for instance Laird (1997)). As a result, Mercosur’s decisions have no force as such and need to be implemented by corresponding national measures, with no obligation for Member

States to comply with common market rules. There is indeed no supranational court through which either a member country or the Mercosur Secretariat can enforce treaty provisions on another member or a private party. This implies that the existence of several Mercosur bodies cannot be weighed as much as for EU bodies.

3. Comparing economic integration in Europe and Latin America

We now turn to the issue of economic integration and how economic integration has developed over time in both Europe and Latin America. An obvious starting point is the optimum currency area (OCA) theory, which was first developed by Mundell (1961), McKinnon (1963), and Kenen (1969).¹² In essence, OCA theory analyses whether the pre-conditions exist for establishing a monetary union with a common currency and a common monetary policy among different countries. The question of whether countries are sufficiently integrated in order to form a monetary union is not the one we are addressing in this paper. However, OCA theory can be a useful tool for helping us define and measure economic integration.

3.1 Measuring economic integration

To measure economic integration, we look at variables of economic integration suggested by the OCA theory, as well as some other variables that have not been explicitly mentioned within this framework but which help complement a more comprehensive definition of economic integration. Most of the employed variables are commonly used in the empirical analysis of OCA criteria. This sub-section outlines the definition of and rationale for including them in our analysis.

Synchronisation of the business cycle

A high degree of synchronisation of the business cycle across two countries indicates that the business cycle in each country is driven largely by common external shocks, or that the economies of the two countries are highly interdependent (Artis and Zhang, 1998a and 1998b). The higher synchronisation, the lower is the cost of pursuing common policies and deepening integration. Following Baxter and Stockman (1989), we use the cross-correlation of monthly industrial production series, de-trended by using a Hodrick-Prescott filter (with $\lambda = 14400$) to measure the degree of synchronisation of the business cycle.

Convergence of inflation rates

Deepening institutional integration is most beneficial if inflation rates are already reasonably similar among the member states participating in the regional arrangement. Inflation convergence, for instance, is a key element of the Maastricht Treaty for the creation of a single European currency. We measure the convergence of inflation as the difference of the 12-month percentage changes in the consumer price indices, and alternatively as the correlation coefficient, for each country with the region's average.

Exchange rate variability

Some authors see a low level of exchange rate variability as a corollary of the OCA property on convergence/similarity of inflation rates. The terms of trade should indeed exhibit narrow fluctuations between countries pursuing intra-regional exchange rate stability or even planning to share a single currency (see for example Eichengreen 1990). If real exchange rate variability is low and currencies are stable vis-à-vis each other, the cost of abandoning exchange rate flexibility or even adopting a common currency is lower. For the European country groupings we take, as our measure of intra-regional exchange rate variability, the "region" average of each country's moving average

¹² For a recent survey of the OCA theory see Tavlas (1993), DeGrauwe (2000), McKinnon (2001), Mongelli (2002).

variance of the log difference of the real/nominal bilateral exchange rate vis-à-vis the *de facto* anchor currency, the Deutsche Mark. For Latin America, being not able to identify an anchor country, we take the same measure using each country's average bilateral exchange rates variability vis-à-vis all other regional currencies.

Trade openness and integration

OCA theory implies that different countries can benefit more from reducing or even eliminating exchange rate variability if they already trade strongly with each other. We employ two types of measures on the trade side. First, we measure the degree of regional trade integration as the ratio of intra-regional trade to total trade. The potential drawback of this measure is that this ratio may not increase even if intra-regional trade rises strongly because of an even higher growth rate in extra-regional trade. We therefore use as an alternative measure the ratio of intra-regional trade to GDP as an indicator of trade openness.

Financial market integration

One important area that has not been sufficiently discussed in the OCA literature is the degree of financial market integration. Countries may benefit from financial market integration by allocating resources more efficiently and reducing transaction costs. Financial market integration permits also to cushion temporary adverse disturbances through capital inflows – e.g. by borrowing from surplus areas or de-cumulating net foreign assets that can be reverted when the shock is over. Under a high degree of financial integration even modest changes in interest rates would elicit equilibrating capital movements across partner countries. This would reduce differences in interest rates, easing the financing of external imbalances. In this paper we employ two proxies for financial market integration. The first is the correlation of monthly equity market returns across countries. We also investigate the degree of financial market openness, which is defined as the ratio of equity market capitalisation to GDP for each country.

Convergence of interest rates

The convergence of interest rates is used as a measure of financial market integration but also of the degree of similarity of the monetary policy stance across countries. The rationale for using this measure is that the higher the initial similarity of interest rates, the less is the cost for each country by moving to a common monetary policy. We test in the analysis both the correlation of nominal short-term interest rates and of short-term real interest rates, using CPI inflation rates as deflator.

Income convergence

More economic integration should also enhance the convergence of income across countries and regions. Again, we refer to an argument of resource allocation in this regard: more integration and openness should lead to more mobility of factors of production, which may result in convergence of income levels. As a proxy, we use the real GDP per capita percentage difference to the region's average. The real GDP per capita numbers were obtained from the Summers and Heston (1988) database and interpolated for the past few years.

3.2 The development of economic integration in Europe and Latin America over time

3.2.1 Overview

As a starting point, it is necessary to specify the country groupings and time periods we are focusing on. As for the index of institutional regional integration, we look at EU-6 and Mercosur countries. In addition, for Europe we also look at the euro area, and for Latin America at a large subset of countries which we call "Latin America 11"¹³. For Europe, we consider the period 1957-2001 and the following six sub-periods:

¹³ For the purposes of this paper, Latin America 11 includes Mercosur countries, the members of the Andean Community (Bolivia, Colombia, Ecuador, Peru and Venezuela), Chile and Mexico.

<i>Sub-period</i>	<i>Main characteristics</i>
March 1957 – August 1971	Bretton Woods system of fixed exchange rates
September 1971 – February 1979	Very volatile exchange rates; failed attempt to establish an exchange rate mechanism (the “Snake”); major recession in 1973-75
March 1979 – August 1987	“Soft ERM”: introduction of EMS with frequent realignments, especially until 1983
September 1987 – December 1992	“Hard ERM”: no realignments (apart from a realignment associated to the lira entering the narrow ERM band in January 1990) until the EMS crisis in September 1992; integration of factor markets, culminating in the establishment of the European Single Market on 1 January 1993
January 1993 – December 1998	“Pre-EMU”: Enhanced nominal convergence and run-up to monetary union
January 1999 onwards	European Monetary Union (EMU)

Due to data availability, we can instead look only at a shorter time period (1980-2000) for Latin America. We chose the following three sub-periods for the purpose of analysing the time changes of economic integration:

<i>Sub-period</i>	<i>Main characteristics</i>
January 1980 – December 1986	Latin American debt crisis; relatively moderate nominal volatility
January 1987 – December 1993	Highly volatile exchange rates, and high rates of inflation or hyperinflation for several Latin American countries
January 1994 – December 2000	Re-structuring and stabilisation programmes in several economies; strengthening of the process of regional integration

Table 2 shows the list of the eleven above-described indicators of economic integration for the six sub-periods for Europe and the three sub-periods for Latin America. Figure 3 provides more detailed examples of the time dynamics of integration. This figure compares the EU-6 countries with Mercosur countries, and show 5-year moving averages for some of the selected indicators of regional economic integration.

As expected, both EU-6 and the euro area are generally a much more integrated economic area than Latin America over time (not only than the selected 11 Latin American countries, but also than Mercosur countries). Overall, comparing the levels of economic integration emerging from the above tables and figures, one can conclude that the degree of economic integration in Latin America is roughly close to that in Europe in the 1960s and 1970s.

As Table 2 illustrates, *exchange rate variability* in Latin America has been substantially higher than in Europe (even with respect to the 1970s, a period characterised by high exchange rate variability in Europe as well). Since changes in the exchange rate arrangement have been of key importance for understanding the integration process in Europe, in the next sub-section 3.2.2 we provide a more detailed discussion on the development of exchange rates. Regional *trade integration and openness* are in Europe much larger than in Latin America on average. The *interest rates and inflation rates* show a much higher degree of co-movement in Europe than in Latin America. In particular, the correlation of nominal interest rates has been around 60% within the euro area during the pre-EMU period, but only around 30% for the Latin American countries. Finally, the higher degree of economic integration is also reflected in the integration of *financial markets*. Equity market return correlations in Europe are at around 50% or higher, which is around twice as high as the correlation in Latin America.

As Figure 3 shows, business cycle correlation, inflation convergence, real interest rate correlation and financial market integration have all been persistently higher within the EU-6 area than among the Mercosur countries, despite some degree of variability in the variables. Similarly, EU-6 countries have also a substantially higher degree of real per capita GDP convergence and trade openness than Mercosur.

Table 2

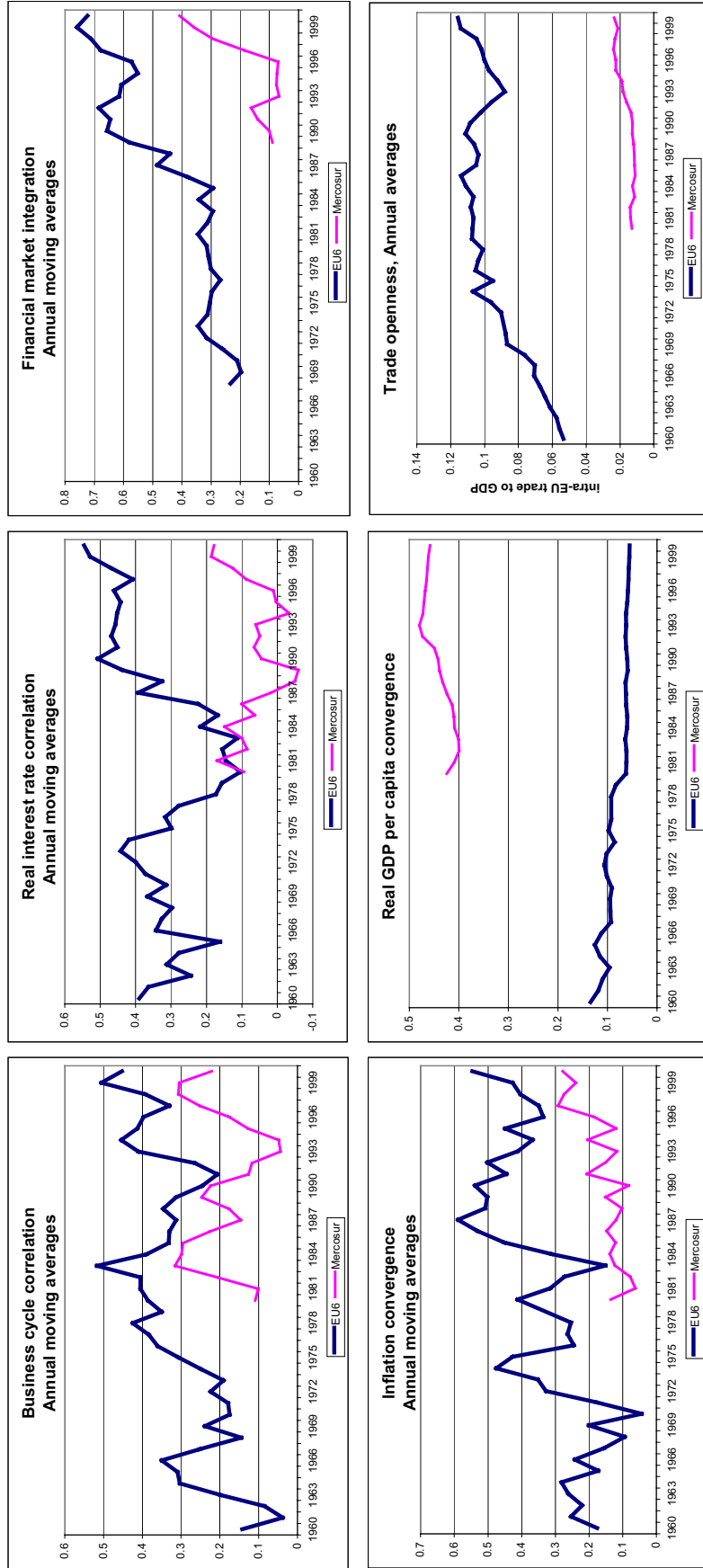
Selected indicators of economic integration in Europe and Latin America

	Business cycle correlation	Real per capita GDP % difference	Inflation % rate correlation	Real interest rate correlation	Nominal interest rate correlation	Real exch. rate volatility	Nominal exch. rate volatility	Trade integration	Trade openness	Financial market integration	Financial market openness
1957 - 70	0.212	23.338	0.209	0.334	0.537	9.083	4.633	61.080	26.990	NA	NA
1971 - 78	0.533	19.845	0.470	0.320	0.240	18.878	16.629	63.211	32.976	0.189	7.354
1979 - 87	0.298	18.715	0.705	0.242	0.273	12.462	10.868	63.012	37.724	0.140	9.466
1988 - 92	0.309	17.113	0.353	0.361	0.482	10.239	7.704	70.602	42.039	0.466	15.625
1993 - 98	0.417	15.213	0.335	0.512	0.596	10.470	9.075	66.113	40.399	0.633	31.419
1999 - 2001	0.334	14.073	0.692	0.483	1.0	4.235	0.0	60.426	45.524	0.486	81.629
1957 - 70	0.282	7.612	0.256	0.462	0.669	7.219	3.937	62.381	30.442	NA	NA
1971 - 78	0.791	6.423	0.508	0.343	0.473	14.923	14.066	65.749	39.062	0.514	8.931
1979 - 87	0.513	5.168	0.889	0.228	0.723	8.344	7.557	64.765	44.485	0.336	11.456
1988 - 92	0.368	5.172	0.368	0.443	0.744	7.605	5.525	69.865	47.291	0.698	20.237
1993 - 98	0.515	4.887	0.539	0.654	0.804	8.220	6.746	65.790	42.899	0.727	37.353
1999 - 2001	0.576	4.722	0.817	0.499	1.0	3.096	0.0	60.503	50.956	0.599	85.552
1980 - 86	0.469	32.091	0.194	0.077	0.093	106.05	90.35	17.026	6.236	NA	NA
1987 - 93	0.240	30.154	0.204	-0.015	0.003	78.24	75.62	19.776	7.844	0.200	NA
1994 - 2000	0.320	32.955	0.311	-0.014	0.329	31.89	33.33	27.630	10.200	0.350	NA
1980 - 86	0.687	23.866	0.321	0.185	0.094	78.30	67.36	13.458	3.709	NA	NA
1987 - 93	0.427	21.876	0.279	-0.008	0.010	91.88	92.68	17.382	5.924	0.202	NA
1994 - 2000	0.458	25.825	0.433	-0.015	0.295	23.42	22.15	30.311	8.412	0.384	NA

Note: Correlation and difference measures are relative to region average. See text for definition of variables.

Figure 3

Comparing Economic Integration in Latin America and Europe



3.2.2 Further evidence on exchange rate variability

Changes in the exchange rate arrangement have been very important for understanding the institutional integration process in Europe. The measure of nominal and real exchange variability briefly outlined in section 3.1 and Table 2 provide a useful insight in this respect. In this sub-section we provide a more detailed discussion of the development of exchange rates dynamics using a more elaborated indicator of exchange rate variability, which has been extensively used in the literature¹⁴.

Bilateral exchange rate variability between currency i and j (σ^{ij}) is defined here as the moving sample standard deviation of the growth rate of the bilateral exchange rate (first differences of the logarithmic exchange rate or exchange rate percentage change):

$$\sigma^{ij} = \left[\frac{1}{n} \sum_{k=1}^n (e_{t-k} - \bar{e}_t)^2 \right]^{0.5}$$

where e is the monthly change in nominal/real bilateral exchange rate while n is the order of the moving standard deviation. In the computation n has been set at 4 in order not to excessively smooth the monthly exchange rate variability. In order to have an indicator of the exchange rate variability within EU or Latin American country groupings, we construct a weighted average (using trade weights) of the above measures using each bilateral variability. For example, in the case of the euro area country grouping, the real (or nominal) exchange rate variability indicator (EVI) is constructed as follows¹⁵:

$$EVI_t = \sum_{i \neq j, ij=1}^{55} w_t^{ij} \sigma_t^{ij}$$

Table 3. Indicator of nominal and Real Exchange Rate Variability in the EU

Country Group	Whole period 1957 2001	Bretton Woods 1957:3 1971:7	Post BW pre ERM 1971:8 1979:2	Soft ERM 1979:3 1987:8	Hard ERM 1987:9 1992:12	Pre EMU 1993:1 1998:12	EMU 1999:1 2001-5
EU 6							
Real	0.0096	0.0087	0.0156	0.0089	0.0079	0.0092	0.0032
Nominal	0.0074	0.0048	0.0146	0.0081	0.0063	0.0078	0.0000
Euro Area							
Real	0.0105	0.0095	0.0165	0.0100	0.0091	0.0102	0.0033
Nominal	0.0080	0.0050	0.0151	0.0090	0.0072	0.0088	0.0003
EU							
Real	0.0163	0.0138	0.0226	0.0177	0.0146	0.0163	0.0098
Nominal	0.0100	0.0046	0.0161	0.0131	0.0101	0.0119	0.0066

Table 3 and Figure 4.a present the indicators of nominal and real exchange rate variability for the *euro area*.¹⁶ A visual inspection of Figure 4.a reveals that between 1957 and 1998 real exchange rate variability has always exceeded nominal exchange rate variability. This is indicative of the fact that in the EU an effort to pursue nominal convergence (i.e., one major requirement for successful regional integration) was in place. Although with different levels of commitment and different paths over time, EU Member States with higher inflation rates accepted swings in, and an appreciation of, their real

¹⁴ See Kenen and Rodrik (1986), Koray and Lastrapes (1989), Chowdhury (1993) and Arize (1996 and 1999).

¹⁵ In the euro area example there are 12 countries but i and j goes from 1 to 11 because Belgium and Luxembourg represent just one country, so there are 55 bilateral real exchange rates and trade weights.

¹⁶ Note that Table 3 also includes the EU-6 and EU-15 while Figure 4 only presents the exchange rate variability for the euro area.

effective exchange rate. This served as an instrument to pursue disinflation and re-structure domestic industry exposed to international competition. Sometimes this led to unsustainable trends in the real exchange rates, which in the ERM experience were then adjusted – though usually only partially and ex-post – by means of so-called “realignments” of the nominal exchange rates.

Besides this general indication, we can distinguish a few sub-periods. A striking feature of fixed but adjustable exchange rates under the Bretton Woods system is that it did not shield European countries from some “occasional” adjustments in exchange rate parities and from some significant real exchange rate variability. The subsequent sub-period, following the demise of Bretton Woods and prior to the ERM experience, is characterised by the highest overall nominal and real exchange rate variability. During the subsequent two sub-periods – i.e. the “soft-and the hard-ERM” – variability declined albeit unevenly and with a very sizeable swing back in the run-up to the 1992-ERM crisis and its aftermath. Nominal exchange rate variability then disappeared with the introduction of the euro in January 1999, while real exchange rate variability has thus far declined to its lowest levels ever.

Table 4 focuses on real exchange rate variability in *Latin America*, distinguishing between Mercosur, Mercosur and its associate members (Chile and Bolivia), and Latin America 11 (the latter is also represented in Figure 4.b). The Table illustrates that in the period 1980-2001 real exchange rate variability in Mercosur was almost 7 times higher than in EU-6, while nominal exchange rate variability was nearly 10 times higher. During times of crisis such variability rose to much higher levels, but such episodes are not discussed in this paper. The more recent episode of exchange rate instability in the region is also excluded from our sample. An important difference with respect to Europe is that in Latin America nominal exchange rate variability generally exceeds real exchange rate variability. This is indicative of the fact that in Latin America there was no systematic effort to pursue nominal convergence over time.

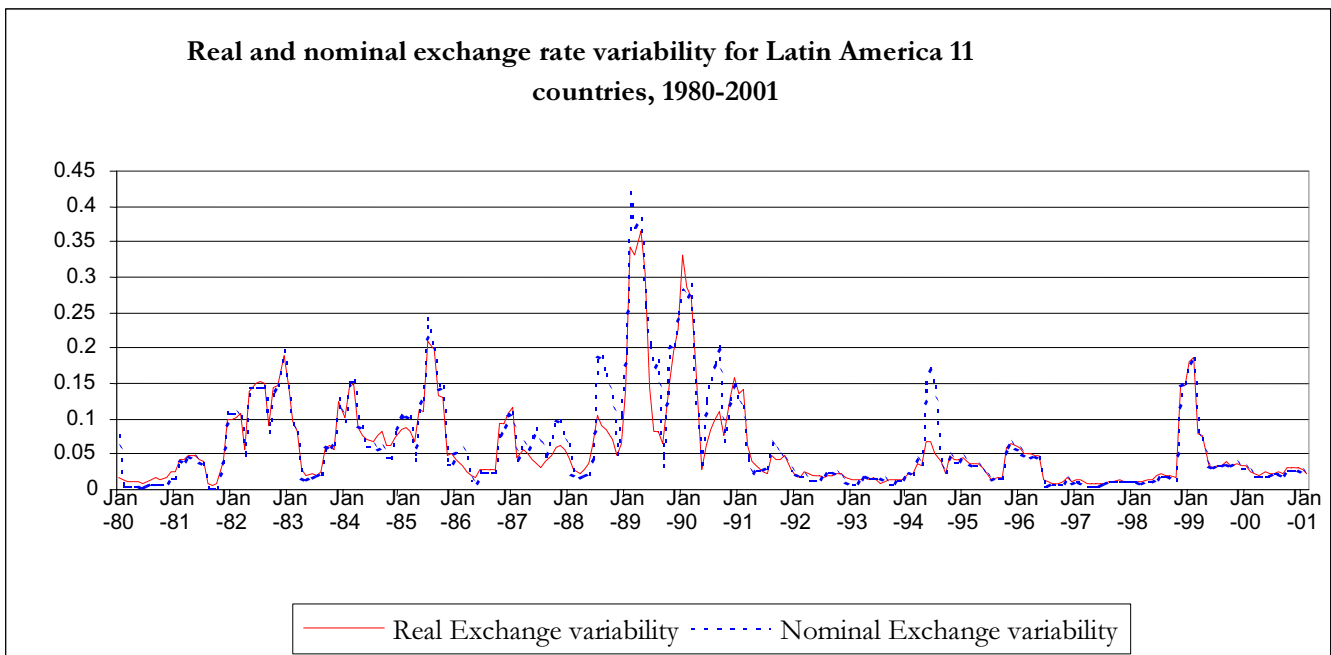
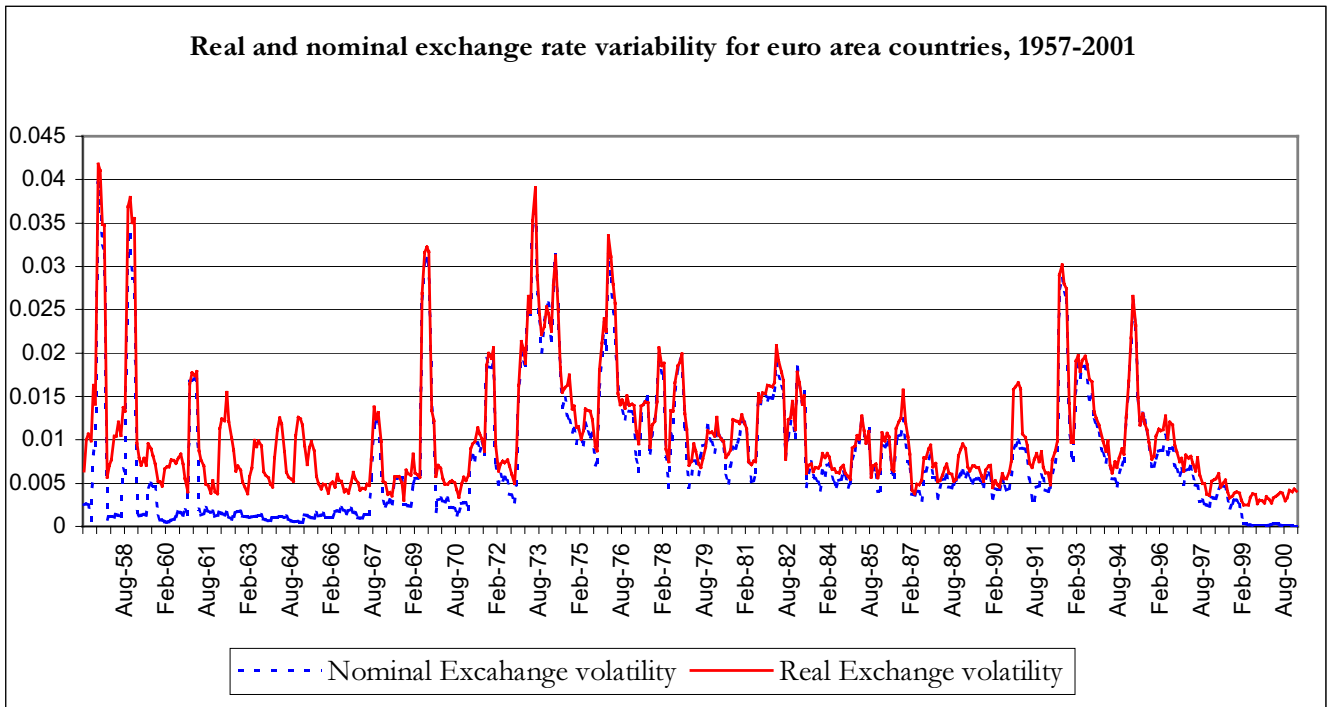
Table 4. Indicator of nominal and Real Exchange Rate Variability in Mercosur and Latin America

Country Group	Whole period 1980:1 2001:2	1980:1 1983:3	1983:4 1988:12	1989:1 1992:1	1992:2 1998:10	1998:11 2001:2
Mercosur						
<i>Real</i>	0.0624	0.1506	0.0437	0.1884	0.0114	0.0598
<i>Nominal</i>	0.0673	0.838	0.0522	0.1988	0.0153	0.0585
Mercosur and associate members						
<i>Real</i>	0.0653	0.1214	0.1433	0.1477	0.0116	0.0474
<i>Nominal</i>	0.0880	0.0803	0.0767	0.1742	0.0122	0.0261
Latin America (11 countries)						
<i>Real</i>	0.0614	0.0635	0.0679	0.1337	0.0243	0.0517
<i>Nominal</i>	0.0661	0.0616	0.0758	0.1494	0.0263	0.0503

Table 4 also shows that exchange rate variability in Mercosur displays some very marked changes between sub-periods. In particular there are two “tranquil periods” – such as from April 1983 to December 1988, and from February 1992 to October 1998 - during which variability was remarkably lower than in the other “crises periods.” In particular, the levels of both nominal and real exchange rate variability during the second “tranquil period” – i.e., the period when regional integration proceeded at the fastest speed within Mercosur – are close to the European levels.

The latter observation indicates that high exchange rate variability is not necessarily embedded in the Latin American economic and financial system. There were in fact two periods in which successful stabilisation was achieved and maintained for some time. However, a climate of sustained low exchange rate variability also requires supporting policies in diverse areas and institutional choices: an issue that will be discussed in the next sections.

Figures 4.a, 4.b



4. Comparing institutional and economic integration: a cluster analysis

We can now turn to the main question of this paper: testing the hypothesis that institutional integration interacts with economic interdependence at the regional levels. We examine and compare the degree and dynamics of integration in both Europe and in Latin America.

After explaining the methodology in Section 4.1, we address three types of questions. A first question is: *how really integrated* are the countries within Europe and Latin America from an economic viewpoint? Can one identify homogenous groups of countries within regions? And, if so, what makes countries within groups similar? Second, by looking at a relatively long time horizon (from 1957 onwards for Europe and from 1980 onwards for Latin America) we investigate the *dynamics* of the process of economic integration within both regions. Which periods have experienced a particularly strong increase in economic integration? While these questions are addressed in Section 4.2, in Section 4.3 we analyse the link between institutional integration, as described in Section 2 above, and economic integration in Europe in comparison with Latin America.

4.1 Methodology

The purpose of the cluster analysis is to detect natural groupings, or “clusters”, among countries. The way the cluster analysis is detecting such groupings is by measuring the dissimilarity among the countries and assigning each country to a particular group by using a distance metric. The distant metric we employ in this analysis is the Euclidean distance

$$D(i, j) = \sqrt{\sum_{k=1}^p (x_{ki} - x_{kj})^2} \quad (3)$$

where $D(i,j)$ measures the dissimilarity between country i and country j for all economic integration characteristics k .

There are two different methods of forming the clusters or groupings. First, one can partition the countries into a predetermined number of clusters. This implies that each country is assigned by iteration to that group to which it is most similar. The second alternative is the hierarchical clustering method.¹⁷ We use this second alternative, more precisely an “agglomerative” hierarchical clustering method. In essence, this method starts by creating a number of clusters N that is equal to the number of countries in the sample. The method proceeds by first combining those two countries that are most similar, and then continuing in the same fashion till all countries belong to the same group or to a single group out of a pre-specified number of groups. We use the average of each group when comparing the Euclidean distance of two different groups. This ensures that the shape of the clusters is reasonably compact.

A further relevant issue is the normalisation of the data. As a starting point, we wish to give equal weight to each of the economic integration variables k . Under the assumption that the variables are each distributed normally, we need to transform the data to have the same mean and standard deviation. We chose a mean of zero and a standard deviation of unity.

¹⁷ See Kaufman and Rousseeuw (1990) and Gordon (1999) for a detailed analysis of cluster analysis methodology and the different underlying choices a modeller has to take.

4.2 The degree and dynamics of regional economic integration

4.2.1 Results for the EU

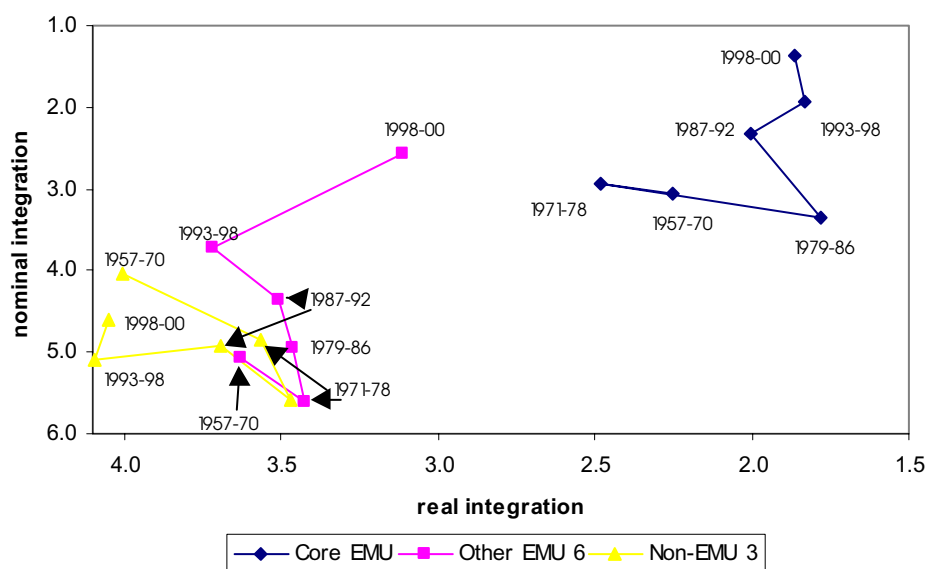
Figure A2.1 in Appendix 2 shows the cluster analysis dendrograms for the fifteen EU countries and the six sub-periods specified in Section 3.2.1. The dendrograms show in which order and at what degree of dissimilarity countries have merged together.

The dendrograms allows us to identify a trend since the 1950s. First, the degree of economic heterogeneity was generally much higher in Europe between the 1950s and 1970s. This can be seen from the size of the Euclidean distance on the vertical axis. It is also less clear-cut to identify clusters in the earlier periods than in the later periods.

A second interesting result is that the countries forming clusters have changed over time, in some cases drastically. More specifically, between the 1950s and the end of the 1970s integration seems to have been strongly related to the *geographic* location and *distance* of the countries to each other. This point is clearly illustrated for the period 1971-79. In this period, the country pairs that were most integrated with each other were usually direct *geographic* neighbours: Austria, Germany and Denmark; Belgium and the Netherlands; Spain and Portugal; and Greece and Italy. By contrast, since the 1980s clusters correspond more closely to *institutional* arrangements, in particular the participation in the ERM and EMU, than to geographic location.

This suggests that EU countries have become increasingly homogenous over time, while the forming of clusters has gradually more been based on institutional factors than on geographic factors.

Figure 5. Real Integration versus Nominal Integration in Europe, 1957-2000



N.B.: The lower the values on the axes, the higher integration.

Core EMU refers to EU-6 founding Member States. Other EMU-6 comprises the other euro area Member States. Non-EMU countries are Denmark, Sweden and UK.

To investigate these general findings in greater detail, Table 5 shows the degree of economic integration for various country groups and clusters. The table shows the average

dissimilarity, based on the normalised Euclidean distance, for each group of countries with the EU average. A smaller number implies a lower degree of dissimilarity and, therefore, a higher degree of integration.

Table 5. Measuring Economic Integration in Europe

	EU15	Core EMU 6¹	Other EMU 6²	Non-EMU cluster³
Total economic integration⁴				
1957 - 70	4.85	3.65	6.12	5.68
1971 - 78	5.12	3.85	6.45	6.00
1979 - 87	5.15	3.90	6.00	6.64
1988 - 92	4.67	3.23	5.49	6.26
1993 - 98	4.34	2.56	4.91	6.48
1999 - 2001	4.02	2.64	4.04	6.40
Real economic integration⁵				
1957 - 70	3.08	2.25	3.63	4.00
1971 - 78	2.95	2.48	3.43	3.56
1979 - 87	2.74	1.78	3.46	3.47
1988 - 92	2.88	2.00	3.51	3.69
1993 - 98	3.02	1.83	3.71	4.09
1999 - 2001	2.80	1.86	3.11	4.05
Nominal economic integration⁶				
1957 - 70	3.84	3.05	5.07	4.04
1971 - 78	4.23	2.95	5.60	4.85
1979 - 87	4.32	3.35	4.95	5.58
1988 - 92	3.63	2.33	4.35	4.93
1993 - 98	3.33	1.93	3.71	5.10
1999 - 2001	2.62	1.38	2.57	4.59

Notes:

As explained in the text, integration is measured as the average of the normalised Euclidean distance of the variables. Therefore, a smaller number indicates less dissimilarity and hence higher integration.

¹ Core EMU6 are: Belgium/Luxemburg, France, Germany, Italy, Netherlands

² Other EMU6 are: Austria, Finland, Greece, Ireland, Italy, Portugal, Spain

³ Non-EMU cluster are: Denmark, Sweden, UK

⁴ includes 7 variables: business cycle convergence, inflation difference, real interest rate convergence, real exchange rate volatility, trade integration, financial market integration, real per capita GDP convergence

⁵ includes 3 variables: business cycle convergence, trade integration, real per capita GDP convergence

⁶ includes 4 variables: inflation difference, real interest rate convergence, real exchange rate volatility, financial market integration

First, core EMU countries (core EMU6 cluster) have always been the most integrated and also further deepened their integration over time. By contrast, the non-EMU cluster has not managed to intensify its degree of integration over time. The most interesting case may be the “other” EMU6 cluster of countries that joined the integration process somewhat later. This cluster includes geographically diverse countries that had the lowest degree of integration in the 1950s and 1960s. However, since the 1970s these countries showed the fastest rate of integration.

A second important finding is that the degree of *nominal* economic integration has been significantly faster than *real* integration in Europe over the past 50 years (see Table 5

and Figure 5). EMU countries were initially more similar with regard to real economic variables than to their nominal counterparts. Real integration progressed and reached a high level by the late 1970s and since then the deepening has slowed. By contrast, nominal volatilities increased and nominal integration fell during the 1970s with the breakdown of the Bretton Woods System. However, the economic integration process in Europe in the 1980s and 1990s has then mainly been driven by stronger integration among inflation rates, interest rates, exchange rates and financial markets.

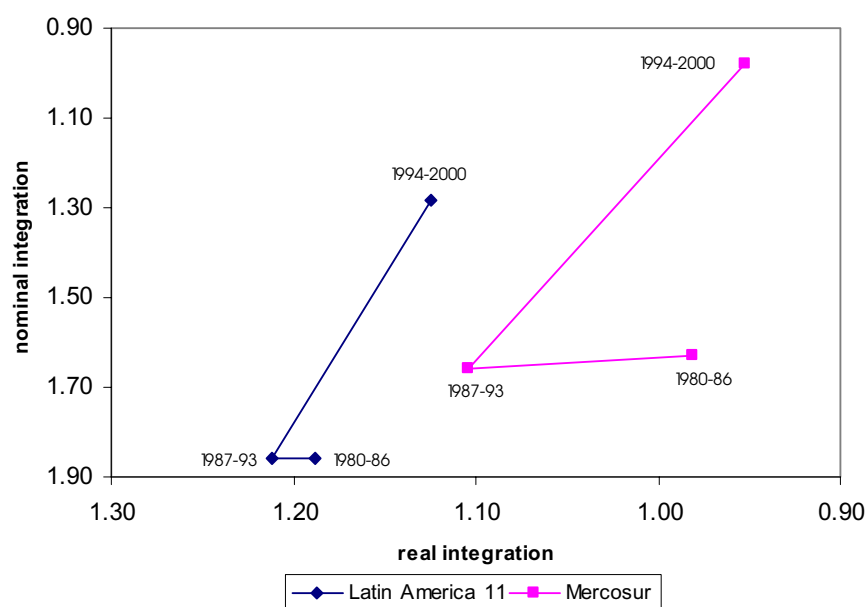
These findings strongly point at institutional factors as the driving force of European economic integration: countries at the centre of the *institutional integration process* have also been those that have integrated most strongly economically.

4.2.2 Results for Latin America

Looking at the dendrograms of the cluster analysis (Figure A.2.2 in Appendix 2) reveals that economic integration in Latin America takes still place along *geographic* lines. The countries most integrated with each other are (i) Argentina, Uruguay and Chile; (ii) Brazil, Paraguay and Peru; (iii) Colombia and Venezuela.

Mexico, Bolivia, and Ecuador are among the least economically integrated countries in Latin America. This is likely to be partly explained by the specific economic characteristics of some of these countries, and also partly by their geographic location. Mexico stands out in particular. It is intuitively convincing that Mexico is one of the least integrated as it is more integrated with the US economy than with the rest of Latin America.

Figure 6. Real Integration versus Nominal Integration in Latin America, 1980-2000



N.B.: The lower the values on the axes, the higher integration.

Turning to the Euclidean measure of integration gives an interesting picture about the time dynamics of the economic integration process in Latin America. Table 6 shows the measure of integration for all Latin America 11 countries as well as for the six countries of Mercosur plus associates. The most interesting information we obtain from this table is that the deepening of economic integration has been driven by integration of the *nominal*

economic variables, such as less nominal and real exchange rate variability, more inflation and interest rate convergence and a higher degree of financial market integration. Real integration through the intensification of business cycle co-movements and trade has been markedly slower. This point is also illustrated in Figure 6, which graphs the nominal integration measure against the real one.

Moreover, economic integration among the four Mercosur countries plus two associate countries has reached a higher level than in Latin America as a whole. The period 1987-93 also deserves a special mention in this context. Table 6 shows that the integration process came to a temporary halt during this period as none of the integration measures deepened throughout these seven years. This most likely is explained by the difficult economic conditions present during that time as numerous Latin American countries suffered under high inflation rates, slow growth and substantial exchange rate variability.

Table 6. Measuring Economic Integration in Latin America

	Latin America 11 countries¹	Mercosur countries²
Total economic integration³		
1980 - 86	2.44	2.13
1987 - 93	2.29	2.11
1994 - 2000	1.87	1.64
Real economic integration⁴		
1980 - 86	1.19	0.98
1987 - 93	1.21	1.10
1994 - 2000	1.12	0.95
Nominal economic integration⁵		
1980 - 86	1.86	1.63
1987 - 93	1.86	1.66
1994 - 2000	1.28	0.98

Notes:

As explained in the text, integration is measured as the average of the normalised Euclidean distance of the variables. Therefore, a smaller number indicates less dissimilarity and hence higher integration.

¹ Latin America 11 are: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, Venezuela

² Mercosur are: Argentina, Brazil, Paraguay, Uruguay

³ includes 6 variables: business cycle convergence, inflation convergence, real interest rate convergence, real exchange rate volatility, trade integration, financial market integration

⁴ includes 2 variables: business cycle convergence, trade integration

⁵ includes 4 variables: inflation difference, real interest rate convergence, real exchange rate volatility, financial market integration

On the whole, the findings of the cluster analysis show that both Latin America and Europe have become more integrated over time. In particular, the integration process of *real* variables (business cycle, trade and income) is generally much slower than the integration process of *nominal* variables (exchange rates, inflation, interest rates, and financial markets). This is a result that one would expect, given the fact that the real integration process of economies is generally much slower as it partly requires the mobility and built-up of physical factors of production. It is relatively more feasible for policy-makers to achieve a

convergence of inflation rates and interest rates across countries than to achieve a closer co-movement of business cycles and trade.

4.3 Interaction between institutional and economic integration: some lessons for Latin America from the European experience

A compelling finding of the analysis conducted in the previous section is that economic integration in Europe occurred along *geographic* lines in the earlier periods, whereas it took place mainly along *institutional* lines since the 1980s. Countries that were most closely committed to European institutional co-operation also integrated more quickly than those joining the various stages of the institutional process (e.g. ERM and monetary union) only later or not at all.

This suggests that institutional integration indeed had an important impact on economic integration in Europe. This is confirmed by Figure 7, which uses the institutional index of regional integration constructed in Section 3 for EU-6 countries and shows that economic integration was slower or even halted during periods, such as the 1970s, when progress in institutional integration was slow. By contrast, economic integration was faster when institutional integration deepened significantly, for instance in the late 1980s and 1990s. For the Mercosur countries (Figure 8), the degree of institutional integration is still much lower than in Europe, although some progress was made in the 1990s.

One of the key lessons from the European experience for Latin America is therefore that intensifying *institutional* integration, such as for instance through the creation of a common market and the co-operation of monetary and exchange rate policies, indeed plays an important role in deepening and accelerating the process of regional *economic* integration. The importance of deepening institutional integration for economic integration in Europe can therefore be taken as a valuable example for the future path of integration in Latin America.

Figure 7

Institutional versus economic integration in Europe, 1957-2000

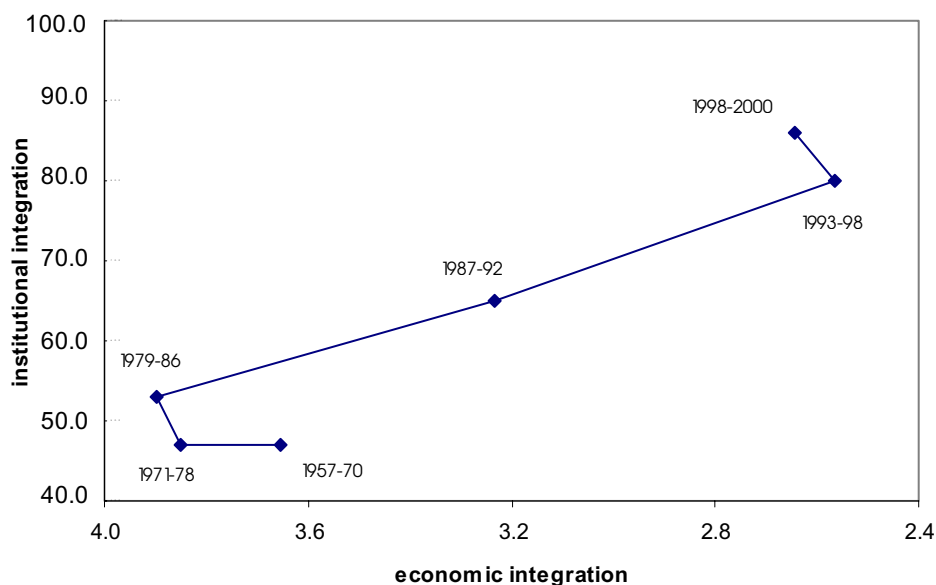
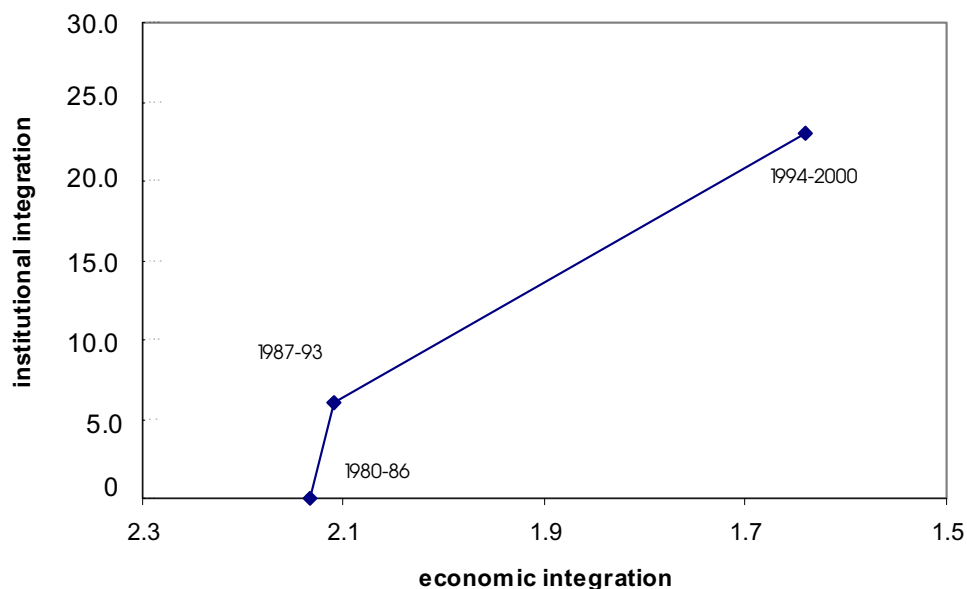


Figure 8

Institutional Integration versus Economic Integration in Mercosur countries, 1980-2000



N.B.: The lower the values in Figures 7 and 8, the higher the degree of economic integration.

5. Concluding remarks

A distinctive feature of European regional integration has been a systematic and incremental approach to institutional integration. This is clearly measured by the new indicator developed in this paper. An ever-larger group of European countries have progressed along the five Balassa stages of regional integration. This has entailed, among other things, a transfer of sovereignty and responsibilities in an increasing number of areas. As our indicator of institutional integration shows for EU-6 countries, the cases of reversal in the process of institutional integration were just a few, and limited to relatively short periods. In comparison, institutional integration has thus far been modest in Latin America.

Europe and Latin America have also performed very differently in terms of some selected, and illustrative, indicators of economic integration. Historically, even excluding from our sample period the most recent episode of exchange rate instability, real (nominal) exchange rate variability has been 7 (10) times higher in Mercosur than in EU-6 countries. The current level of economic integration, as measured by a large number of OCA-based indicators, is in Latin America by and large comparable to that of European countries in the 1960-1970s.

While we have not explicitly tested for the direction of causality between institutional and economic integration, we have found a strong correlation between them: following each institutional stage economic integration deepened, enhancing welfare and efficiency for the participating countries and justifying the subsequent institutional stage. The cluster analysis used in this paper also shows that, between the 1950s and 1970s, economic integration in Europe primarily occurred among *geographically* close countries. However, since the early 1980s the economic integration process occurred mainly along institutional lines. In other words, countries that participated most strongly in the *institutional* integration process in

Europe also integrated more strongly with each other, whereas countries less involved in the institutional process also integrated less in economic terms. Finally, the cluster analysis finds that the monetary integration process in Europe, culminating in EMU at the beginning of 1999, has been the main driving force of European economic integration since the 1980s.

One key lesson from the European experience for Latin America is, therefore, that intensifying *institutional* integration, for instance through the creation of a common market and the co-ordination of monetary and exchange rate policies, might indeed play an important role in deepening and accelerating the process of regional *economic* integration. The importance of deepening institutional integration for economic integration in Europe can be taken as a valuable example for the future path of integration in Latin America. However, it should be emphasised that the process of regional integration, and in particular of monetary unification, is a lengthy and complex one. Its successful implementation takes time and requires a strong, sustained political commitment. Another important lesson for Latin America is that, while the deepening of economic integration calls for an effective institutional framework, further advancements in institutional integration are in turn feasible only if economic integration supports them as well.

To what extent, however, can Latin America follow the footprint of Europe? After all, Latin America currently fulfils the OCA criteria that we have reviewed to a lesser extent not only than the EU today, but sometimes even than the EU at the beginning of its regional integration process. As a group, Latin American countries display a lack of persistent fiscal discipline, low trade and financial integration, and modest business cycle synchronisation. Is this necessarily problematic? A possible, although partial, reply to this question can be found in the hypothesis of “endogeneity” of OCA, which has been discussed quite extensively in the economic literature in recent years.¹⁸ The basic intuition behind the endogeneity hypothesis is that monetary integration reduces trading costs *much beyond* the elimination of the costs arising from exchange rate variability (that can be to some extent hedged). A common currency among partner countries is seen as “a much more serious and durable commitment” (McCallum (1995)).¹⁹ The ultimate implications of this hypothesis is that a group of countries adopting a single currency might develop into an OCA *ex-post* even if this group does not constitute an OCA *ex-ante* (Rose (2000) and Frankel and Rose (1997, 2000)). Hence, the OCA characteristics of a regional arrangement are not given once and for all.

This justifies in turn a number of questions that would need to be fully addressed in a future extension of this paper. Would the present modest level of economic integration necessarily rule out the option of further deepening regional integration in Latin America? Or would it rather suggest that the process(es) of (sub)regional integration will succeed in Latin America to the extent that realistic objectives are set in line with regional economic conditions and the prevailing level of political commitment? After all, the experience of the EU seems more in line with this second line of reasoning, and the European process of integration has always had strong political roots, motivations and purposes. The political commitment has permitted the process to move forward through increasingly advanced institutional stages.

Over time the EU has, in fact, experienced a dynamic interaction between the process of institutional integration and the fulfilment of certain OCA criteria. While this result is

¹⁸ For some qualifications, and explanations, of the “endogeneity” of OCA studies see Quah (2000), van Wincoop (2000), De Grauwe (2000), Gaspar and Mongelli (2002), and Mongelli (2002).

¹⁹ Amongst others, sharing a single currency precludes future competitive devaluation, fosters trade and financial integration, facilitates foreign direct investment and the building of long-term relationships, and might over time encourage forms of political integration. This will in turn promote economic and financial integration and even business cycle synchronisation among the countries sharing the single currency. This could result from the increasing propensity of partner countries to import from each other, from productivity shocks spilling over via trade, or the disciplining effect of a monetary or exchange rate arrangement.

consistent with the hypothesis of OCA endogeneity, it does not mean that OCA criteria are entirely endogenous to the policy decisions affecting regional integration. There is indeed no “automatic pilot” ensuring that a strengthening in institutional integration will bring about, for instance, higher intra-regional trade, more synchronised business cycles, financial market integration and nominal convergence. Rather it means that, if the analysis becomes dynamic and forward-looking, a virtuous circle may be identified between institutional and economic integration at the regional level.

The analysis in this paper and, in general, tests of the hypothesis that institutional integration interacts with economic integration at the regional level, will need to be extended in a number of ways. Amongst others, the variables taken into consideration will need to be broadened and additional tests of the interaction between institutional and economic integration are required to corroborate our preliminary findings. An aspect that will require due consideration is that in Europe a strong nominal anchor presented itself “attracting” over time other surrounding partner countries, fostering better standards for policy making (see e.g., Goodhart (1989) and Rogoff (1996)). Latin America has not yet found a solution to this type of problem.

References

- Alberola, E., A. Busián and F. de Lis**, 2002, “The Quest for Nominal and Real Convergence Through Integration in Europe and Latin America,” Banco de España, Working Paper 0213.
- Anderton, R. and F. Skudelny**, 2001, Exchange Rate Volatility and Euro Area Imports, ECB WP 64, May.
- Arize, A.** 1996. Real Exchange Variability and Trade Flows: the Experience of eight European Countries, *International Review of Economics and Finance*, 5/2, 187-205.
- Arize, A., Osang, T. and Slottje, D.J.** 1999. Real Exchange Volatility in Latin America and its Impact on Foreign Trade, Unpublished paper.
- Artis, M. and W. Zhang.** 1998a. Core and Periphery in EMU: A Cluster Analysis. EUI RSC Working Paper 98/37. Florence: European University Institute.
- Artis, M. and W. Zhang.** 1998b. Membership of EMU: A Fuzzy Clustering Analysis of Alternative Criteria. EUI RSC Working Paper 98/52. Florence: European University Institute.
- Atkeson, A. and T. Bayoumi**, 1993, Do Private Capital Markets Insure Regional Risk? Evidence from the United States and Europe, *Open Economies Review* 4: 303-324.
- Balassa, B.** 1961. *The Theory of Economic Integration*. Irwin, Homewood, Illinois.
- Bayoumi, T. and B. Eichengreen.** 1993. Shocking Aspects of European Monetary Integration. In F. Torres and F. Giavazzi. (eds.) *Adjustment and Growth in the European Monetary Union*. Cambridge: Cambridge University Press.
- Bayoumi, T. and B. Eichengreen.** 1997. Ever Closer to Heaven? An Optimal Currency Index of European Countries. *European Economic Review*. 41: 760-70.
- Baxter, M. and A.C. Stockman.** 1989. Business Cycles and the Exchange-Rate Regime. *Journal of Monetary Economics*, 27: 377-400.
- Ben-David, B.** 1993. Equalizing Exchange: Trade Liberalization and Income Equalization. *Quarterly Journal of Economics*, 108, 653-679.
- Berg, A., Borensztein, E. and Mauro, P. (2000):** An Evaluation of Monetary Regime Options for Latin America. Paper presented at the seminar “Monetary Union: Theory, EMU Experience, and Prospects for Latin America” (Vienna)
- Canzoneri, M., J. Valles and J. Vinals.** 1996. Do Exchange Rates Move to Address International Macroeconomic Imbalances? CEPR Discussion Papers 1498. London: CEPR.
- Caramazza, Ricci and Salgado**, 2000 “Trade and Financial Contagion in Currency Crises,” International Monetary Fund, mimeo.
- Chowdhury, A.R.** 1993. Does Exchange Rate Volatility Depress Trade Flows? Evidence from Error Correction Models. *Review of Economics and Statistics*, 75, 700-706.

Christiano, L., M. Eichenbaum and C. Evans, 1999, Monetary Policy Shocks: What Have We Learned and To What End? In John Taylor and Michael Woodford (eds.), *Handbook of Macroeconomics*, North-Holland, Amsterdam.

Corden, W. M. 1972, "Monetary Integration, Essays in International Finance," International Finance Section No. 93, Princeton University, Department of Economics.

Cushman, D. 1988. U.S. Bilateral Trade Flows and Exchange Rate Risk during the Floating Period, *Journal of International Economics*, 24, 317-330.

Dell’Ariccia, G. 1999. Exchange rate Fluctuations and Trade Flows: Evidence from the European Union, IMF Staff Paper 46/3, 315-334.

De Grauwe, P. and Verfaillie, G. 1988. Exchange Rate Variability, misalignment and the European Monetary System, in R.C. Marston ed., *Misalignment of Exchange Rates: Effects on Trade and Industry*. University of Chicago Press, 77-103.

Eichengreen, B. 1990, "One Money for Europe? Lessons from The U. S. Currency Union," *Economic Policy: a European Forum*, Vol. 5, No. 1 pp. 118-187, April.

----- 1998. "Does Mercosur Need a Single Currency?". NBER Working Paper no. 6821, 1998.

European Central Bank, 1999, "Inflation Differentials in a Monetary Union," European Central Bank, Frankfurt Germany, Monthly Bulletin, October.

----- 2001, *The Monetary Policy of the ECB*, European Central Bank, Frankfurt.

Emerson, M., D. Gros A. Italianer, J. Pisani-Ferry, H. Reichenbach, 1992, *One Market, One Money*, Oxford University Press, Oxford.

Everitt, B.S. 1993. *Cluster Analysis*. 3rd ed. London: Edward Arnold.

Flam, H. and Jansson, P. 2000. EMU Effects on International Trade and Investment. Institute for International Economic Studies Seminar Paper 683, Stockholm University.

Fleming, J. Marcus, 1971 "On Exchange Rate Unification," *The Economic Journal*, Vol. 81, pp. 467-88.

Forbes and Rigobon, 2000 "Measuring Contagion: Conceptual and Empirical Issues," MIT-Sloan School of Management, mimeo.

Frankel, J. and A.K. Rose. 1997. IS EMU more Justifiable Ex-post than Ex-ante? *European Economic Review*. 41: 753-60.

Fratianni M. and A. Hauskrecht. 2002. A Centralised Monetary Union for Mercosur: Lessons from EMU, paper presented at the Conference on "Euro and Dollarization: Forms of Monetary Union in Integrated Regions" Fordham University and CEPR, New York, April 5-6, 2002.

Frankel, J. and A.K. Rose. 1998. The Endogeneity of the Optimum Currency Area Criteria. *Economic Journal*. 108: 1009-1025.

Frankel, J. and Wei, S. 1993. Trade Blocs and Currency Blocs. NBER Working Paper 4335, Cambridge, MA.

Fratzscher (2000) "On Currency Crises and Contagion" Institute for International Economics Working Paper, Washington D.C.

García Herrero, A and J. Santillán, 2002, "Latin American Financial Development in Perspective," Banco de España, Working Paper 0216.

Gaspar Vitor and Francesco Paolo Mongelli, 2002, "European Monetary Unification and the Single Market," forthcoming in "Economic Convergence and Divergence in Europe: Growth and Regional Development in an Enlarged European Union," edited by Gertrude Tumpel-Gugerell and Peter Moslechner, Edward Elgar.

Gordon, A.D. 1999. *Classification*. 2nd ed. Boca Raton, FL: CRC Press.

Hochreiter E., K. Schmidt-Hebbel and G. Winkler, 2002, Monetary Union: European Lessons, Latin American Prospects, paper presented at the Conference "Monetary Union: Theory, EMU experience, and prospects for Latin America" co-organised by the Oesterreichische Nationalbank on 15-16 April 2002.

Ingram, J.C. 1973, "The Case for the European Monetary Integration." Princeton University, Essays in International Finance, No. 98.

Issing, Otmar, 1996, "Europe: Political Union Through Common Money?" The Institute of Economic Affairs.

-----, 2001, "Economic and Monetary Union in Europe: political priority versus economic integration?" Paper for the Conference 2001 of the European Society for the History of Economic Thought, February 2001.

Kaufman, L. and P.J. Rousseeuw. 1990. *Finding Groups in Data*. New York: John Wiley & Sons.

Kenen, P.B. 1969. The Theory of Optimal Currency Areas: An Eclectic View, in R.A.

Laird, S. 1997. "Mercosur: Objectives and Achievements". World Bank, Economic Notes No. 22 (June)

McKinnon, Ronald I, 2001 "Optimum Currency Areas Revisited," Stanford University, mimeo.

Milesi-Ferretti, Gian Maria, and Assaf Razin, 1996 "Current Account Sustainability." *Princeton Studies in International Finance No. 81*. Princeton, NT: Princeton University Press.

Mongelli, Francesco Paolo, 2002, "'New' Views on the Optimum Currency Area Theory: What is EMU Telling Us?" European Central Bank, Working Paper No. 138.

Mundell R. and A.K. Swoboda (eds.) *Monetary Problems of the International Economy*, Chicago: University of Chicago Press. What Year???

Mundell R., 1973 "Uncommon Arguments for Common Currencies", in H.G. Johnson and A.K. Swoboda, *The Economics of Common Currencies*, Allen and Unwin, pp.114-32.

Kenen, P. and Rodrik, D. 1986. Measuring and analyzing the Effects of short-term Variability in Real Exchange Rates. *Review of Economics and Statistics*, 68, 311-319.

Koray, F. and Lastrapes. 1989. Real Exchange Volatility and US Bilateral Trade: a VAR approach. *Review of Economics and Statistics*, 71, 708-712.

Masson Paul, 2000 “Multiple Equilibria, Contagion, and the Emerging Market Crises,” IMF Working Paper WP/99/164.

McKinnon, R.I. 1963. Optimum Currency Areas. *American Economic Review*, 53:717-25.

Mundell, R.A. 1961. A Theory of Optimal Currency Areas. *American Economic Review*, 51:105-46.

Obstfeld M. and K. Rogoff, 2000, The Six Major Puzzles in International Macroeconomics: Is There a Common Cause? NBER Working Paper 7777.

Padoa-Schioppa, Tommaso, 1982, “Capital Mobility: Why is the Treaty not Implemented”, reprinted in “*The Road to Monetary Union in Europe: the Emperor, the Kings and the Genies*”, Oxford University Press, Oxford, 2000.

-----, (2000), “The European Union and the Nation State,” The Hume Lecture 2000, Hume Occasional Paper no. 58.

Quah, D., 2000, Discussion of A. Rose, One money, one market: the effect of common currencies on trade, Economic Policy, April.

Rose, A., 2000, One money, one market: the effect of common currencies on trade, Economic Policy, April.

Rose, A., 2001, Currency Unions and Trade: the Effect is Large, Economic Policy, October.

Scandizzo, S., 2002, "Options for Monetary Integration in the Andean Community", Corporación Andina de Fomento, mimeo.

Sims, C, 1980. Macroeconomics and Reality. *Econometrica*, 48, 1-48.

Summers, R. and Heston, A. 1988. A New Set of International Comparisons of Real Product and Price Levels Estimates for 130 Countries, 1950-1985. *Review of Income and Wealth*, 34, 1-25.

Tavlas, G. S. 1993, “The ‘New’ Theory of Optimum Currency Areas”, *The World Economy*, pp 663-685.

-----, 1994, “The Theory of Monetary Integration,” *Open Economies Review*, Vol. 5 no. 2, pp 211-230.

Van Rijckeghem and Weder 1999 “Sources of Contagion: Finance or Trade?” IMF Working Paper WP/99/146, October.

Werner Report, 1970, “Report to the Council and the Commission on the Realisation by Stages of Economic and Monetary Union in the Community,” Supplement to Bulletin 11 – 1970, Luxembourg.

CRITERIA AND INDICATORS USED TO CONSTRUCT THE INSTITUTIONAL INDEX OF REGIONAL INTEGRATION FOR EU-6

Indicators used for a Free Trade Area (FTA) and a Customs Union (CU)

- a) Changes over time of **tariffs and quotas on trade** within the area (FTA) and vis-à-vis third countries (CU) (see also Table A1.2, column 1) - This is by far the most important indicator for a FTA/CU, which also presents the advantage of being easily measurable and unbiased. The specific scores given are presented in Table A1.1 at the end of this appendix.
- b) In the EU-6 case the start of the **Common Agricultural Policy (CAP)** in 1962 is also considered (Table A1.2, column 1) - The CAP is here taken into account only as a precondition without which it would not have been possible to extend the FTA to agricultural goods. For this reason, the start of the CAP in 1962 implies one additional point. The implications of CAP as an EU common policy are instead considered when analysing the steps towards TEU.

Using these indicators, a fully-fledged CU (i.e., incorporating a FTA) would obtain a score of 25 (which is the case for EU-6), while the intermediate stages may obtain from 1 to 13 points (see Table A1.1). The final step toward a FTA/CU therefore obtains a much higher weight than each intermediate step. The same “non-linear” approach applies also to the other Balassa stages described hereafter.

Indicators used for Common Market (CM)

- a) Progress in abolishing **non-tariff barriers** (Table A1.2, column 2) - The creation of a CU does not automatically imply full integration of product and services markets within a region. A further step is needed to this aim, namely the abolition of all measures with an effect comparable to that of tariffs and quotas. In Europe, in 1974 the European Court of Justice defined such measures as “*all trading rules enacted by Member States which are capable of hindering, directly or indirectly, actually or potentially, intra-Community trade*” (“Dassonville” case 8/74). Since in the subsequent years some progress was made as a result of repeated rulings of the Court of Justice, one point is assigned in concomitance with year 1974. Another point is assigned in 1979, when the Court issued a particularly important ruling (Cassis de Dijon). However, there is no doubt that in Europe the key step towards the abolition of non-tariff barriers was the 1985 White Paper, a programme which by the end of 1992 had been 95% completed. The White Paper was put into effect with the European Single Act of 1986, which entered in force in 1987 (two additional points). As it would be extremely difficult (and possibly arbitrary) to quantify the intermediate steps between 1987 and the official launch of the European Single Market on 1 January 1993, the methodology assigns 5 points just on the occasion of the latter event (see Table A1.1).
- b) Measures taken in order to liberalise the **movement of capital** (see Table A1.2, column 3)¹ - In this regard, it could be observed that the role which measures on capital movements play in a process of regional integration is twofold. On the one hand, *restrictions* on capital movements may be interpreted as a key precondition to preserve some degree of intra-regional exchange rate stability coupled with some degree of monetary policy autonomy. On the other hand, the *liberalisation* of capital movements leads to a monetary union *if* member countries want to preserve intra-regional exchange rate stability. Although this “impossible trinity” approach is correct, taken alone it does not sufficiently emphasise another key proposition, namely

¹ Technology is here not considered as a separate factor. This is based on the assumption that capital movements include FDI, which is a major instrument of technology transfer. Opening a branch, setting up joint ventures, and acquiring foreign companies in order to horizontally or vertically extend the production structure, is a significant component of capital movement. However, certain empirical studies suggest that FDI fail to transfer technology. Technology improvements often remain confined to the headquarters. This would imply that technology should be measured as a separate factor. Hence, although this is not the case for the time being, more refined versions of this paper could include technology as a separate item, using indicators such as the EU patents policy.

that the *decisive and ultimate* precondition for intra-regional exchange rate stability is *intra-regional economic convergence*. This means that capital flow restrictions can well play a role to preserve exchange rate stability for some time, but in the longer run they jeopardise such stability since they allow policy makers postponing measures designed to convergence towards best performing countries. On the contrary, as the European experience of the early 1990s clearly illustrates, free capital movement is a key factor explaining the increasing weight of economic convergence as core goal of economic policy. Consequently, in Table A1.1 all steps towards the liberalisation of capital movements obtain a positive score, whereas all restrictive measures receive a negative one. Emphasis is given to those measures which were taken at the *regional* level, since liberalisation in one individual country does not *per se* imply increased integration.

- c) Measures taken to liberalise the **movement of workers** (Table A1.2, column 4) - This is another key indicator, in line with Mundell's seminal paper (Mundell (1961)). However, achieving a single labour market is far more demanding than integrating product, services and financial capital markets.

In the Treaty of Rome, this objective was pursued by entitling workers to accept job offers within the internal market and by abolishing any discrimination based on nationality between workers (Art. 48). By 1968 this rule was, at least in principle, already enforced (one point). However, this approach to labour mobility was clearly insufficient, as it did not address the key issue of the actual possibility (i.e., disincentives) to move across the borders of countries participating in the regional arrangement. Such an issue would involve that a number of supplementary measures be taken at the regional level, such as promoting the mobility of pension rights, making information on cross-border job opportunities transparent, recognising professional qualifications across different countries, and harmonising national labour market regulations. Although since 1993 the EU is supposed to have an internal market for labour, these measures are far from having been fully implemented. Also for that reason², less than 2% of the working age population of the EU consists of people from one Member State working in another. This explains why the maximum score possible for this indicator (8) cannot be given to EU countries in this field. Three further steps have been however selected, each implying an additional point: a directive of 1989 on mutual recognition of higher education diplomas; the fact that, following the Amsterdam meeting of the European Council in 1997 and the Action Plan elaborated by the Commission the same year, policies in the area of labour mobility have gained momentum; and the full implementation in the EU-6 area, since 1998, of the Schengen convention of 1990 on free circulation of people.

On the whole, a CM as such (i.e, without considering the other stages of regional integration) would obtain 25 points (Table A1.1). The score assigned to EU-6 is 21, in order to signal that much has still to be done in the area of labour mobility.

Indicators used for an Economic Union (EUN)

- a) The **degree of co-ordination of national macroeconomic policies** (i.e., fiscal, exchange rate and monetary policies) (see Table A1.2, column 5) - How to incorporate regional macroeconomic policies in the index of regional integration is a complex issue, open to discussion. Such policies, in fact, cannot be considered as independent of the need for regional exchange rate stability, but they are largely endogenous. For instance, the establishment of the EMS in 1979 is clearly intertwined with the need for exchange rate stability in the region, so that it is impossible to find a direction of causality between regional integration and need for exchange rate stability (as it might still be the case, for instance, for the establishment of the CU or the CM).

Two avenues can be followed to tackle this problem.

The first avenue is that followed in this paper. According to this approach, the degree of co-ordination of all regional macroeconomic policies should become an *integral part* of the index (see Table A1.2, column 5). The rationale for this approach is that not only in the case of macroeconomic policies, but also more generally *it is impossible to disentangle the sense of causality between a process of regional integration and the need for exchange rate stability as illustrated by the OCA variables*. As already mentioned in the Introduction, the main objective of the analysis is not that of identifying a direction of causality, but, more simply, that of identifying a possible strong correlation between the variables.

² There are of course factors explaining scarce labour mobility which is very difficult – if not even impossible – for policy makers to deal with (e.g. differences in language, life style, housing markets).

Along with an alternative avenue, macroeconomic policies should not be taken into account, in order to circumscribe the problem of circular causation. This avenue is not followed in this paper.

- b) The implementation, at the regional level alongside the national level, of those **microeconomic policies which are most likely to affect the need for regional exchange rate stability** (Table A1.2, column 6) - The latter policies are mainly: (b.1) *competition policy* (i.e., measures designed to forbid subsidies and regulations that favour domestic producers); (b.2) *transport policy*; (b.3) *harmonisation of VAT on trade of goods and services*; and (b.4) *harmonisation of other national structural (in particular, labour market) policies in order to increase price (in particular, labour cost) flexibility* within the region. The successful implementation of these four policies (see Table A1.1 for the events considered and scores assigned to each event) is likely to increase the cross-border price elasticity of demand for similar products produced in different countries participating in the regional arrangement. The higher the elasticity, the more a swing in the exchange rate can heavily shift competitive advantages within the area, thus producing strong effects on profitability and triggering political reactions. Conversely, the link between the need for regional exchange rate stability and other microeconomic policies (e.g. R&D policy and environmental policy) seems uncertain and in any case more indirect. The latter policies are therefore not taken into account.

On the whole, an EUN as such (i.e, without considering the other stages of regional integration) would obtain 25 points. The score assigned to EU-6 is 23, in order to signal that there is still room for improvement in the area of harmonisation of structural policies.

Indicators used for Total Economic Integration (TEI)

- a) The set-up of **supranational institutions and decision-making processes**, as well as the **structuring of the process of regional integration through laws issued and enforced at the supranational level** (Table A1.2, column 7) - Of course, the use of this indicator only with regard to TEI is somewhat arbitrary. Supranational institutions and laws can indeed play a crucial role also when building up, for instance, a FTA or a CM. It is equally true, however, that, when pursuing total economic integration, supranational institutions and laws become not only a desirable but also a *necessary* condition.

In the EU-6 experience, supranational institutions and laws were set up from the very onset of the process. Although they were strengthened over time, there is little doubt that the basic supranational framework was already available with the Treaty of Rome. This implies the assignment of 4 points already in 1958, when the Treaty of Rome went into force. Out of several subsequent developments, three events have been selected, each implying one additional point: (i) the establishment in 1974 of the European Council as a permanent forum providing political impulse; (ii) the involvement of citizens in the election of the European Parliament in 1979; and (iii) the Treaty of Amsterdam, which entered into force in 1999 and introduced, among other things, an extension of qualified majority voting. As a result, the score assigned at the end of the period considered is 7. The highest possible score is, however, 9, in order to signal that – apart from any discussion on political union, which falls outside the scope of the paper – even in the EU there is a clear case for strengthening the institutional supranational aspects of the process of regional economic integration.

- b) The concrete steps towards, and the conduction of, **macroeconomic policies at the supranational level** (see Table A1.2, column 5) - We are of course referring to the achievement of a single monetary and exchange rate policy in 1999, with the establishment of the Eurosystem and the European Central Bank (five additional points). This event was prepared in the course of the 1990s with a process sanctioned by the Maastricht Treaty. The most important step in this process was the so-called Stage II, which started in 1994 (one point). The score assigned at the end of the period considered is, therefore, 6. The highest possible score is, however, 9, in order to signal that fiscal policies are already conducted at the national level, although within the context of the Stability and Growth Pact.
- c) Those **microeconomic policies which are conducted only or mostly at a supranational level and are most likely to affect the need for regional exchange rate stability** (Table A1.2, column 6). In the European experience (the only relevant thus far), such policies are, in our view: (2.i) the **CAP**; (2.ii) the **use of the EU general budget to strengthen the process of catching up in member countries** such as Greece, Ireland, Portugal and Spain (EU structural funds). The CAP is here included due to its role as first European common policy. Given the analytical purposes of the paper, no attention is paid to the shortcomings and distortions related to the CAP, which is just considered in its nature as common policy (three points, of which one in 1962 when the CAP started and two in 1964 when it was strengthened). EU transfers of structural funds to poorer member countries are included since they may have fostered the catching-up

process in these countries, thus reducing their need for exchange rate adjustment. However, within EU-6 these transfers play a less important role than within EU-15. They therefore obtain 1 point in 1988, when structural fund expenditure in the EU budget is doubled and reformed. The score assigned at the end of the period considered is 4. The highest possible score is, however, 7, in order to signal that a TEI would involve further unification of microeconomic policies. However, such a highest score is lower than that envisaged for macroeconomic policies in order to signal that, in line with the principle of subsidiarity, the case for unification of microeconomic policies is weaker than that for unification of macroeconomic policies.

On the whole, an EUN as such (i.e, without considering the other stages of regional integration) would obtain 25 points. The score assigned to EU-6 is 17.

Table A1.1

**INDEX OF REGIONAL INTEGRATION FOR EU-6 COUNTRIES:
SCORES GIVEN TO EACH EVENT**

(N.B.: Scores envisaged by the methodology but not actually assigned to EU-6 are highlighted in italics)

Stages in the process of regional integration, and events selected	Scores for each intermediate step	Maximum score possible
<p>Free trade area (FTA) and customs union (CU) (considered jointly)</p> <p>a) FTA:</p> <p>(i) each additional reduction of tariffs by (at least) 20% implies one additional point. However, the final step towards a FTA is weighed differently (see (iii))</p> <p>(ii) quota abolition (possible intermediate stages are not considered)</p> <p>(iii) the completion of the FTA (brings as many points as is the difference between 15 and the score achieved prior to completion (6 points, in the case of EU-6)).</p> <p>(iv) the start of the CAP in 1962 (see this Appendix, main text for an explanation)</p> <p>b) CU</p> <p>(i) each additional reduction by (at least) 20% in the difference between average external tariffs in individual countries and the Common External Tariffs (CETs) implies one additional point. However, the final step towards a CU is weighed differently (see (ii))</p> <p>(ii) the completion of the CU (brings as many points as is the difference between 9 and the score achieved prior to completion (6 points, in the case of EU-6))</p>	<p>4=1*4</p> <p>4</p> <p>6</p> <p>1</p> <p>4=1*4</p> <p>6</p>	<p>25 (given by the sum of the scores below)</p> <p>15</p> <p>10</p>
<p>Common market (CM)</p> <p>a) Progress in abolishing non-tariff barriers:</p> <p>(i) “Dassonville” ruling of the Court of Justice (1974)</p> <p>(ii) Cassis de Dijon ruling of the Court of Justice (1979)</p>	<p>1</p> <p>1</p>	<p>25 (given by the sum of the scores below)</p> <p>9</p>

(iii)	European Single Act (1986; entered in force in 1987)	2	
(iv)	official launch of the European Single Market (January 1993)	5	
b) Steps in the liberalisation of the movement of capital:			8
(i)	restoration of currency convertibility in 1958 to allow the settlement of current account transactions	1	
(ii)	directive of 11 May 1960, which promotes the liberalisation of certain capital flows and prevents member countries from introducing new restrictions	1	
(iii)	directive of 18 December 1962, which widens the scope for liberalisation		
(iv)	directive of 21 March 1972, which goes in the opposite direction by allowing countries to re-introduce restrictions in order to tackle the turmoil associated with the collapse of the Bretton Woods system	1	
(v)	directive of 17 November 1986, which, coupled with a less important directive of 1985, gives new impetus to the liberalisation process	-2	
(vi)	directive of 24 June 1988, which for the first time requires the full liberalisation of capital movements within the EU by 1 July 1990 (in 1990 the implementation of the directive is completed in the two EU-6 countries (FR, IT) which maintained residual restrictions)	2	
c) Measures taken to liberalise the movement of workers:			8
(i)	entitlement of workers to accept job offers within the internal market and abolition of any discrimination based on nationality between workers;	5	
(ii)	directive of 1989 on mutual recognition of higher education diplomas;	1	
(iii)	following the Action Plan elaborated by the Commission in 1997, policies in the area of labour mobility have gained momentum;	1	
(iv)	full implementation in the EU-6 area, since 1998, of the Schengen convention of 1990 on free circulation of people;	1	
(v)	<i>other possible future measures (N.B.: not yet implemented. This implies that the actual total score obtained by item (c) at the end of the period is 4 instead of 8).</i>	1	
Economic union (EUN)			25
a) The degree of co-ordination of national macroeconomic policies:			13
(i)	establishment in 1958 of the Monetary Committee;	1	
(ii)	establishment in 1964 of the Committee of Governors;	1	
(iii)	launch of the “snake” in 1972;	1	
(iv)	crisis of the snake since 1973;	-1	
(v)	launch of the EMS in 1979;	4	

(vi)	strengthening of the EMS in 1987, with the Basle-Nyborg agreements;	1	12
(vii)	convergence criteria laid down in the Maastricht Treaty ³ ;	3	
(viii)	adoption of the Stability and Growth Pact in 1997 (+3).	3	
b) The implementation, at the regional level alongside the national level, of those microeconomic policies which are most likely to affect the need for regional exchange rate stability			
(i)	<u>competition policy</u> : attribution in 1962 of strong powers to the Commission for competition policy;	3	
(ii)	<u>transport policy</u> : Commission's Action Programme on Transport Policy, published in 1962 in order to remove obstacles on trade;	3	
(iii)	<u>harmonisation of VAT on trade of goods and services</u> : the adoption of the VAT on trade of goods and services in April 1967 (First Council Directive No. 67/227/EEC on the harmonisation of legislation of Member States concerning turnover taxes/VAT on trade of goods and services), which starts the process of harmonisation;	3	
(iv)	<u>harmonisation of other national structural (in particular, labour market) policies</u> in order to increase price (in particular, labour cost) flexibility within the region: start of the process of monitoring of structural reforms, agreed by the European Council in Cardiff in June 1998. <i>(N.B.: While each of the events from (i) to (iii) brings about an actual increase in the score by three points, the last event brings only one additional point. As a result, the total score obtained since 1998 (10) is lower than the highest possible for an EUN as far as microeconomic policies are concerned (12). This indicates that, although in the EU the degree of regional integration in terms of policy harmonisation and co-ordination is very high, some room for improvement is still left especially in the area of structural policies harmonisation.)</i>	3= 1 (i.e., Cardiff process) +2 (i.e., other future measures)	

³ The 1992-93 crisis as such does not add or subtract any points to the index of regional integration. The rationale for that is that exchange rate stability in the EU was mainly pursued via foreign exchange intervention, mutual financial assistance and so-called "credibility" of central banks prior to the crisis; and through enhanced efforts to achieve converging fundamentals following the crisis. Differently from the snake crisis, the process of regional integration is not discontinued in 1992-93. It is not by chance that a major adjustment of the Italian budget in September 1992 was approved a week after, and not a week before, the lira started its fluctuation outside the ERM. This explains why the ratification of the Maastricht Treaty in 1993 and the related approval of legally binding convergence criteria imply an higher score for that year (+3) despite the enlargement of the ERM fluctuation band to +/-15%.

Total economic integration (TEI)		25
a) The set-up of supranational institutions and decision-making processes , as well as the structuring of the process of regional integration through laws issued and enforced at the supranational level :		9
(i) basic supranational framework already available with the Treaty of Rome (1957; entered in force in 1958);	4	
(ii) establishment in 1974 of the European Council as a permanent forum providing political impulse;	1	
(iii) involvement of citizens in the election of the European Parliament in 1979;	1	
(iv) Treaty of Amsterdam, which entered into force in 1999 and introduced, among other things, an extension of qualified majority voting.	1	
(v) <i>Other possible future measures (N.B. The actual score assigned at the end of the period considered is 7. The highest possible score is, however, 9, in order to signal that – apart from any discussion on political union, which falls outside the scope of the paper – even in the EU there is a clear case for strengthening the institutional supranational aspects of the process of regional economic integration).</i>	2	
b) The concrete steps towards, and the conduction of, macroeconomic policies at the supranational level:		9
(i) Achievement of a single monetary and exchange rate policy in 1999, with the establishment of the Eurosystem and the European Central Bank;	5	
(ii) Event (i) was prepared in the course of the 1990s with a process sanctioned by the Maastricht Treaty. The most important step in this process was the so-called Stage II, which started in 1994	1	
(iii) <i>other possible future measures (N.B.: the actual score assigned at the end of the period considered is 6. The highest possible score is, however, 9, in order to signal that fiscal policies are already conducted at the national level, although within the context of the Stability and Growth Pact).</i>	3	
c) Those microeconomic policies which are conducted <i>only or mostly</i> at a supranational level and are most likely to affect the need for regional exchange rate stability		7
(i) the start of the CAP in 1962	1	
and		
the strengthening of CAP in 1964 (see above for an explanation);	2	
(ii) use of the EU general budget to strengthen the process of catching up in member countries (EU structural funds): structural fund expenditure in the EU budget was doubled and reformed in 1988;	1	
(iii) <i>Other possible future measures (N.B. The highest possible score for c) is 7, while the actual score at the end of the period is 4. This signals that a TEI would involve further unification of microeconomic policies).</i>	3	

Index of regional integration FOR EU-6 countries (1957 - 1978)

	TRADE 1) Tariffs and quotas	INTEGRATION OF PRODUCT, SERVICES AND FACTOR MARKETS			CO-ORDINATED OR COMMON POLICIES		SUPRANATIONALITY 7) Institutional developments	INDEX OF REGIONAL INTEGRATION (score at the end of each year)						
		2) Non-tariff barriers	3) Capital movement	4) Labour mobility	5) Macroeconomic policies	6) Microeconomic policies		FTA	CU	CM	EU	TEI	TOTAL	
1957								0	0	0	0	0	0	0
1958			Restoration of currency convertibility (December)		Establishment of the Monetary Committee (January)		EEC Treaty of Rome and EURATOM Treaty enter in force. A number of objectives and supranational institutions are set up. Integration starts being structured through Community law (January)	0	0	1	1	4	6	
1959	The transition period for eliminating the internal tariffs starts. Intra-EU6 tariffs are reduced by 10%. They will be progressively eliminated between 1.1.59 and 1.7.68.							0	0	1	1	4	6	
1960	Intra-EU6 tariffs reduced by 10% (July)		Directive of 11 May 1960, which promotes the liberalisation of certain capital flows					1	0	2	1	4	8	
1961	Quota restrictions lifted at the end of the year, with a few exceptions. Intra-EU6 tariffs reduced by 10% (January)							5	0	2	1	4	12	
1962	Intra-EU6 tariffs reduced by 20% (10% January, 10% July). In January the difference between average external tariffs in individual countries and the Common External Tariffs (CETs) is reduced by 30% (both agriculture and industrial products; for the latter, reduction had taken place already in 1961). Start of Common Agricultural Policy		Directive of 18 December 1962, which widens the scope for capital flow liberalisation		Start in April of Common Agricultural Policy (CAP). Strong Commission powers for competition policy. The Commission's Action Programme on Transport Policy is published in order to remove obstacles on trade (January)			7	1	3	7	5	23	
1963	Intra-EU6 tariffs reduced by 10% (June)							8	1	3	7	5	24	
1964					Establishment of the Committee of Governors of the Central Banks of the Member Countries of the European Community	Strengthening of CAP		8	1	3	8	7	27	
1965	Intra-EU6 tariffs reduced by 10% (January)							8	1	3	8	7	27	
1966	Intra-EU6 tariffs reduced by 10%. The difference between average external tariffs in individual countries and the Common External Tariffs (CETs) is further reduced by 30% (both agriculture and industrial products; for the latter, reduction had taken place already in 1963) (January)							9	3	3	8	7	30	
1967	Intra-EU6 tariffs reduced by 10% (July)					Directive of 11 April 1967 on the harmonisation of legislation of Member States concerning turnover taxes/VAT on trade of goods and services		9	3	3	11	7	33	
1968	Customs union completed on 1 July; all remaining internal tariffs abolished; national customs duties in trade with the rest of the world replaced by the Common External Tariffs (CETs)			Workers are entitled to accept job offers within the internal market. Any discrimination based on nationality between workers is, in principle, abolished				15	10	4	11	7	47	
1972			Directive of 21 March 1972, which allows countries to re-introduce certain restrictions		With the Basle agreement, the snake enters into force (April)			15	10	2	12	7	46	
1973					Italy withdraws from the snake (February)			15	10	2	11	7	45	
1974		The European Court starts the process of removal of non-tariff barriers on trade (Dassonville case; July)			France withdraws from the snake (January)		The European Council is formally established (December)	15	10	3	11	8	47	
1975					France re-enters the snake (July)			15	10	3	11	8	47	
1976					France withdraws again from the snake (March)			15	10	3	11	8	47	
1978								15	10	3	11	8	47	

Index of regional integration FOR EU-6 countries (1979 - 2001)

	TRADE	INTEGRATION OF PRODUCT, SERVICES AND FACTOR MARKETS			CO-ORDINATED OR COMMON POLICIES		SUPRANATIONALITY	INDEX OF REGIONAL INTEGRATION (score at the end of each year)					
		1) Tariffs and quotas	2) Non-tariff barriers	3) Capital movement	4) Labour mobility	5) Macroeconomic policies		6) Microeconomic policies	7) Institutional developments	FTA	CU	CM	EU
1979		Cassis de Dijon ruling by the European Court of Justice (principle of mutual recognition of national laws affecting trade if such laws are de facto equivalent) (February)				The European Monetary System (EMS) becomes operational (March)	European Parliament elected by the Community citizens directly (June)	15	10	4	15	9	53
1985		EC-1992 White Paper programme		Schengen initial agreement on removal of border controls for EU-6 (excluding Italy)				15	10	4	15	9	53
1986			Directive of 17 November 1986, which gives new impetus to the liberalisation process					15	10	6	15	9	55
1987		European Single Act in force (July)				Strengthening of the EMS through the Basle-Nyborg Agreement (September)		15	10	8	16	9	58
1988			Directive of 24 June 1988, which completes the liberalisation of capital movement from 1 July 1990 onwards			Doubling and reform of structural fund expenditure in the EU budget		15	10	8	16	10	59
1989				Directive No. 89/48/EEC on mutual recognition of higher education diplomas. However, this directive has not proved sufficiently effective (December)				15	10	9	16	10	60
1990			France completes liberalisation in January, Italy in May. From July onwards free capital movement is compulsory. No EU-6 country will re-introduce restrictions afterwards	Schengen convention on removal of border controls for EU-6 (excluding Italy) (June)		Start of Stage I of EMU. Italy enters the narrow (+/- 2.25) band within the Exchange Rate Mechanism (ERM) of the EMS	Ex-GDR in the EU as a result of German reunification	15	10	14	16	10	65
1992						EMS crisis. Italy abandons the ERM (September)	Re-doubling of structural fund expenditure in the EU budget. Ceiling to EU budget set at 1.27% of Union EU GDP, to be possibly increased only by a unanimous vote. Reform of Common Agricultural Policy	15	10	14	16	10	65
1993		The European Single Market is established on 1 January. To a very large extent, restrictions on factor movements are abolished. The process is completed by dismantlement of non-tariff barriers (e.g. on market access, competitive conditions and market functioning)				Widening of the ERM band to +/-15%. However, with the ratification of the Maastricht Treaty in November, nominal convergence starts being enhanced in line with standardised and legally binding convergence criteria	The Treaty on European Union, signed in Maastricht in 1992, enters into force. Among other things, a monetary union shall be established by 1.1.1999	15	10	19	19	10	73
1994						Start of Stage II of EMU. The European Monetary Institute is set up (January)		15	10	19	19	11	74
1995				Schengen convention enters into force (excluding Italy)				15	10	19	19	11	74
1996						Italy re-joins ERM		15	10	19	19	11	74
1997				Commission's Action Plan for free movement of workers (June)		Approval by the European Council of the Pact for Stability and Growth (December)		15	10	20	22	11	78
1998				Since 31 March the Schengen convention is fully in force in all EU-6 countries, including Italy		Establishment of the European Central Bank (June)	Process of monitoring of national structural reforms, agreed by the European Council in Cardiff (June)	15	10	21	23	11	80
1999						11 EU countries (including EU-6) start a monetary union (January)	The Amsterdam Treaty, signed in 1997, enters into force (extension of qualified majority voting, etc.) (January)	15	10	21	23	17	86
2001								15	10	21	23	17	86

Index of regional integration for MERCOSUR countries (1991 - 2001)

	TRADE		INTEGRATION OF SERVICES AND FACTOR MARKETS		5) Policy co-ordination	INDEX OF REGIONAL INTEGRATION (score at the end of each year)									
	1) Tariffs, quotas and non-tariff barriers		2) Non-tariff barriers			3) Capital movement		4) Labour mobility		FTA	CU	CM	EU	TEI	TOTAL
1991	<p>ETA: Trade Liberalisation Programme based on two guidelines: (1) semiannual, progressive, linear and automatic tariff reductions; (2) lists of products temporarily excluded from such reductions, to be reduced by the end of each year; (3) progressive elimination of non-tariff restrictions or equivalent measures. As regards (1), a 47% tariff reduction is completed in June 1991, and 7% decreases are planned every six months in order to obtain 100% by January 1995.</p>		<p>With the establishment of the intergovernmental Common Market Group - the main executive body of MERCOSUR - a number of working groups are established to study issues related to the establishment of a common market. These groups can only make recommendations to the Common Market Group for consideration and/or implementation.</p>						2	0	1	0	1	4	
1994	<p>The MERCOSUR Trade Commission is established by the Protocol of Ouro Preto (December). The Trade Commission administers trading relations between the members and acts as a forum of first instance for the settlement of trade disputes.</p>								3	0	1	0	2	6	
1995	<p>ETA: An "imperfect" FTA is established in January 1995 between Argentina, Brazil, Paraguay and Uruguay. The FTA does not cover the entire tariff universe. For the remaining products, the so-called "Regime for Final Adjustment to the Customs Union" starts for Brazil and Argentina. A list is defined for which intra-regional import tariffs must be subject to annual, linear and automatic reductions until reaching 0% by January 1, 1999. The stages of this process respond to the following tariff reduction timetable: 1996 25%; 1997 50%; 1998 75%; 1999 100%.</p> <p>CU: The Common External Tariff (CET) on imports from third countries is set at 11 different levels ranging from 0 to 20%, with exception lists for each MERCOSUR member (up to 300 tariff items for Argentina, Brazil and Uruguay until 2001, and 399 items for Paraguay until 2006). For all these exceptions a converging process towards the CET is envisaged.</p>		<p>Under Resolution No. 90/95, a new structure is established for working groups under the Common Market Group. These working groups deal with issues such as communication, financial matters, transport and infrastructure, environment, industry, agriculture, energy, and labour and social security. This framework, however, remains based on an inter-governmental structure.</p>						10	5	2	0	2	19	
1996	<p>The "Regime for Final Adjustment to the Customs Union" (see under "1995") starts in Paraguay and Uruguay. It has to be completed by January 1, 2000.</p>		<p>In December Member States sign the Protocol of Montevideo, which stipulates the phasing out of barriers on trade in services within ten years.</p>						10	6	2	0	2	20	
1997	<p>In December Brazil imposes a system of discretionary licenses for some imports, such as dairy products, fuel, fruits, certain chemical products and machinery.</p>								9	6	2	0	2	19	
1998	<p>The Brazilian restrictions started in December 1997 are further tightened. Resistance to the measure from the MERCOSUR partners leads to the creation of a tribunal to settle the dispute. The tribunal rules that the regime must be dismantled no later than the end of 1999. This is the first time that the MERCOSUR countries use their dispute-settlement mechanism since the approval of the Protocol of Brasilia in 1994.</p>		<p>Following the Protocol of Montevideo (see under "1997"), formal negotiations start in the second half of 1998.</p>						10	6	3	0	2	21	
1999	<p>ETA: Some sensitive goods, which were excluded from the FTA and gradually incorporated (see under "1995"), become in December part of the FTA for Argentina and Brazil. Exceptions are still allowed for Paraguay and Uruguay. However, special regimes remain for sectors such as the automotive and sugar industries, with a longer period of transition towards free trade. Moreover, the devaluation of the Brazilian currency in January of 1999 brings about serious economic problems for MERCOSUR member countries, which originate temporary trade restrictions.</p> <p>CU: in 1999 the CET does not yet cover capital goods, computers and software, and telecommunication equipment. As a result, each MERCOSUR country applies its own level of tariff to those goods. Tariffs on capital goods are planned to converge at 14 per cent by January 2001 in the cases of Argentina and Brazil and by January 2006 for Paraguay and Uruguay. For computers and software and telecommunication equipment, the tariffs are planned to converge at 16 per cent in 2006.</p>						<p>One working group is created in June 1999, called Macroeconomic Co-ordination Committee. The Committee: a) is responsible for examining the economic policies of MERCOSUR member countries and for drafting new macroeconomic co-ordination proposals, including an action programme for greater macroeconomic convergence; b) explores mechanisms both for the harmonisation of statistical data and to identify methodological criteria used by some member countries to prepare their economic indicators. Moreover, in the same year the MERCOSUR Heads of State endorse the idea of elaborating a "mini-Maastricht Agreement" for securing fiscal balance within the group as a first step towards the possible creation of a monetary union.</p>		11	7	3	1	2	24	
2000	<p>ETA: Some sensitive goods, which were excluded from the FTA and gradually incorporated (see "1996"), become in December part of the FTA also for Paraguay and Uruguay.</p>								12	7	3	1	2	25	
2001	<p>Argentina partly abandons the MERCOSUR CET system by eliminating tariffs on Argentine imports of capital goods and raising tariffs on consumption goods to 35%. The temporary shift of Argentina to a dual currency currency board for current account transactions impinges on trade with MERCOSUR partners.</p>								11	6	3	1	2	23	

APPENDIX 2

Figure A2.1: Cluster Analysis Dendrograms for EU15

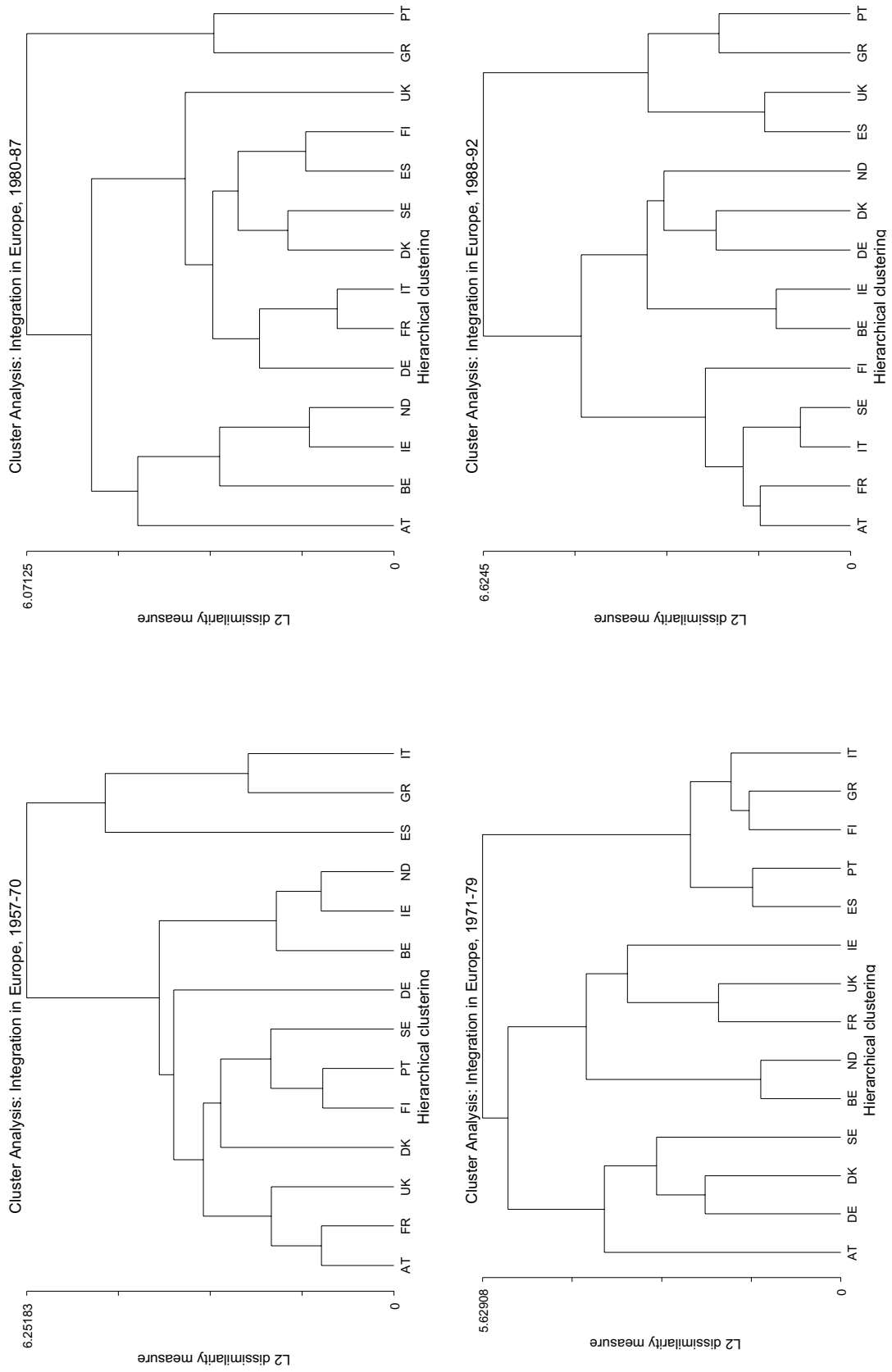


Figure A2.1: Cluster Analysis Dendrograms for EU15 (cont.)

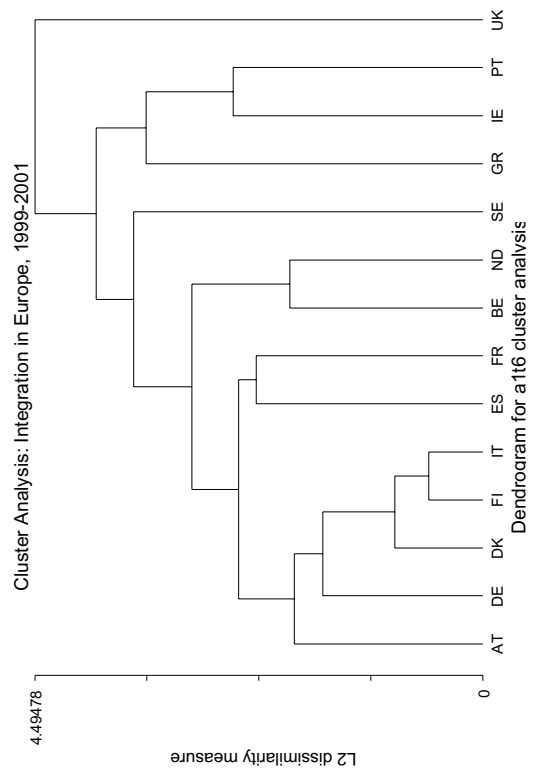
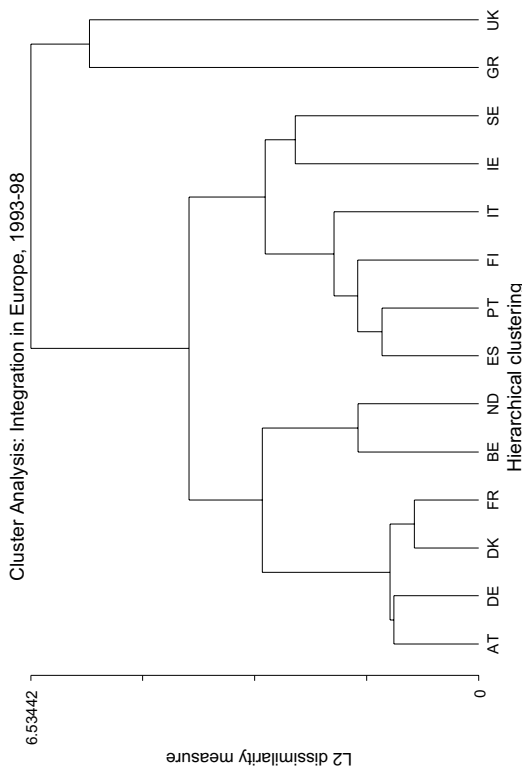
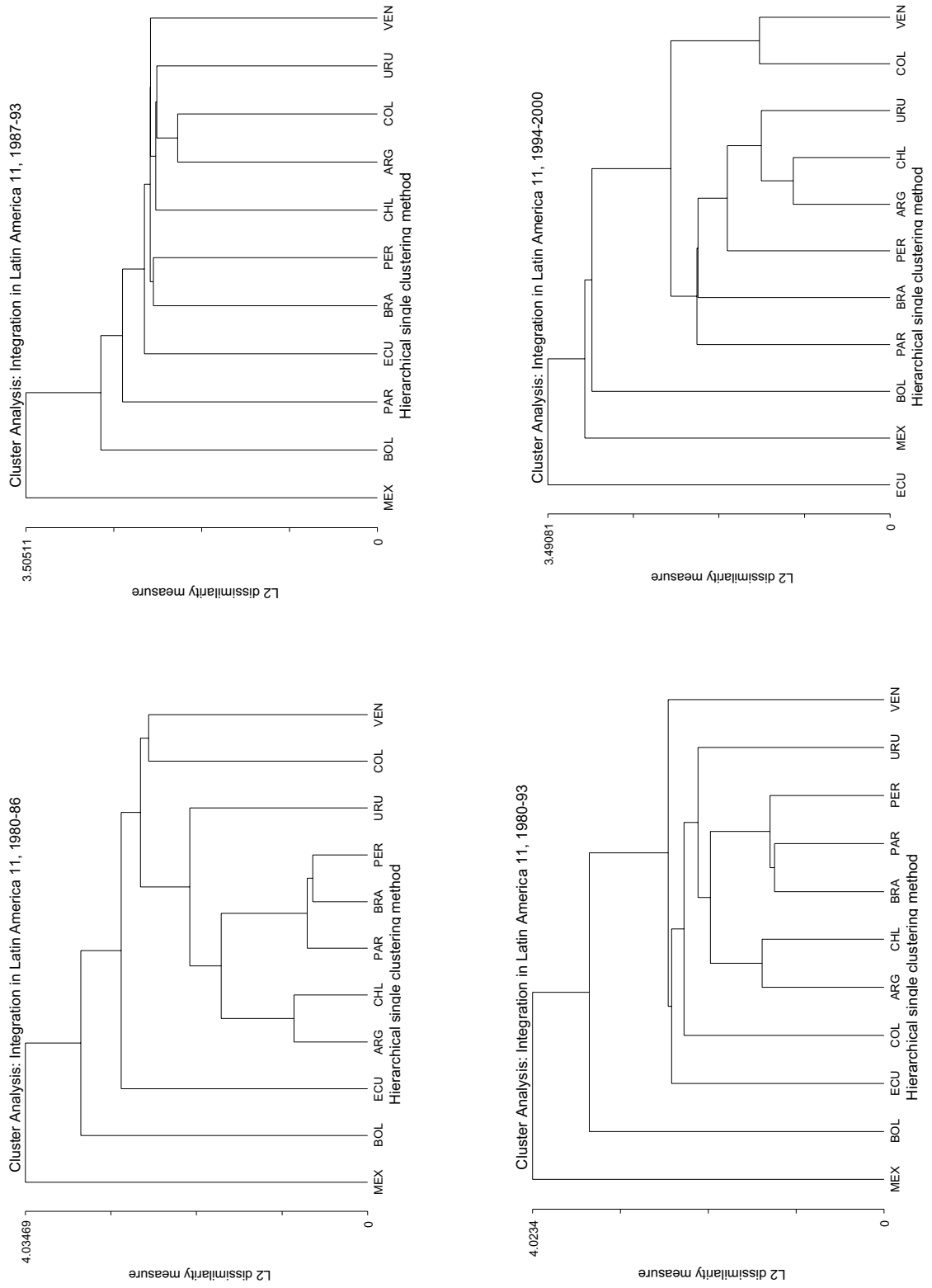


Figure A2.2: Cluster Analysis Dendrograms for Latin America 11



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