



The Link between Institutional and Economic Integration: Insights for Latin America from the European Experience

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Abstract

The European experience illustrates that institutional integration interacts with economic integration at the regional level. In this paper we ask how economic and institutional integration are linked and whether there is a *causal* link between the two. We present an original indicator of institutional integration and study how it developed vis-à-vis diverse measures of economic integration. In particular, we ask what insights can be drawn from the European process of regional integration, which started in the 1950s, for regional integration in Latin America today. We find that Latin America is currently less economically integrated not only than the European Union today, but for certain economic variables even than the European Union in the 1960s. A VAR analysis illustrates that the link between institutional and economic integration has worked both ways throughout the European experience. There is also evidence that stronger institutional integration has indeed led to deeper economic integration.

The fact that institutional integration, i.e. efforts to adopt common policies towards integration, and actual economic integration, such as measured by trade and financial market integration and synchronised business cycles, are closely intertwined has long been emphasized in the literature on regional integration (e.g. Balassa, 1961). However, little attention has been given to the question how the two interact and whether institutional integration necessarily leads to more economic integration. Similarly, a further open question is whether the existence of a certain degree of economic integration is a necessary

pre-requisite for regional policy-makers to engage in deepening institutional integration.

This paper tests the hypothesis that institutional integration interacts with economic integration at the regional level. We analyse and compare the degree of institutional and economic integration in Europe since the late 1950s and in Latin America since the 1980s. We ask whether there are parallels between the early stages of European integration in the 1950s and 1960s, and Latin America today. We then explore the causality between institutional and economic integration. This provides some insights for the future of institutional and economic integration in Latin America. This topic is of policy relevance as Latin America currently stands at a cross-road for deciding the future of regional co-operation. Issues are being debated such as how deep regional integration should become and whether Latin America should give priority to pursuing so-called "South-South" arrangements (e.g. Mercosur) or "North-South" arrangements (e.g. FTAA).

Much of the literature so far has focused on individual elements of regional integration within regions. As to integration in Latin America, for instance Calvo and Mendoza (1997) and Milesi-Ferretti and Razin (1997) have examined the sustainability of current accounts imbalances and fiscal policies. Another branch of the 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) compare the degree of financial sector development across Latin American countries. Finally, Hochreiter, Schmidt-Hebbel and Winkler (2002) assess the issue of the sustainability of a monetary union in Latin America vis-à-vis the European experience.

This paper contributes to this debate in two ways. First, we present an original measure of institutional integration for Europe since the 1950s and for Latin America since the 1980s. The intuition behind this measure comes from Balassa's (1961) seminal work on classifying different stages of regional integration. Second, we test empirically for a causal relationship between institutional integration and a broad set of measures of economic integration on the basis of a VAR methodology.

The paper is organised as follows. Section 1 presents our measure of institutional integration for groups of European and Latin American countries. In Section 2 we examine 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. We then tackle in Section 3 the core question of linking institutional and economic integration in a VAR framework. Section 4 offers concluding remarks.

1. An index of institutional regional integration for the EU and Mercosur

In his seminal contribution, Balassa (1961) identified five main stages of regional integration.¹ Such stages can be defined as the outcome of policy decisions taken by regional governments, intergovernmental fora and/or supranational institutions in order to affect the depth (i.e., the final objectives) and breadth (i.e., the geographical scope) 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 3 to test 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 are defined 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. We look at the period 1957–2001 for the European Union (EU) and 1991–2001 for Mercosur, which comprises Argentina, Brazil, Paraguay and Uruguay. 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.

The institutional index of regional integration is constructed for the EU-6 founding Member States taken as a whole (see Figure 1); and for Mercosur taken as a whole (Figure 2). 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. Each of these groupings or individual countries proceeded with its own speed and path in the process of integration with other partner countries. This implies that a composite index for the EU-15, though feasible, would be more difficult to interpret than for EU-6.

The methodology works as follows. 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, using 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 Dorrucchi et al. (2002).² Two general criteria should be borne in mind here. First, to the extent possible scores are not assigned on the basis of the date when a certain decision was taken (e.g. Treaty of Rome in 1957), but rather the year and month

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

| 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. | 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. | European Economic Community since 1968 MERCOSUR aims to become 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). | 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 to become 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. | 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. | 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. |

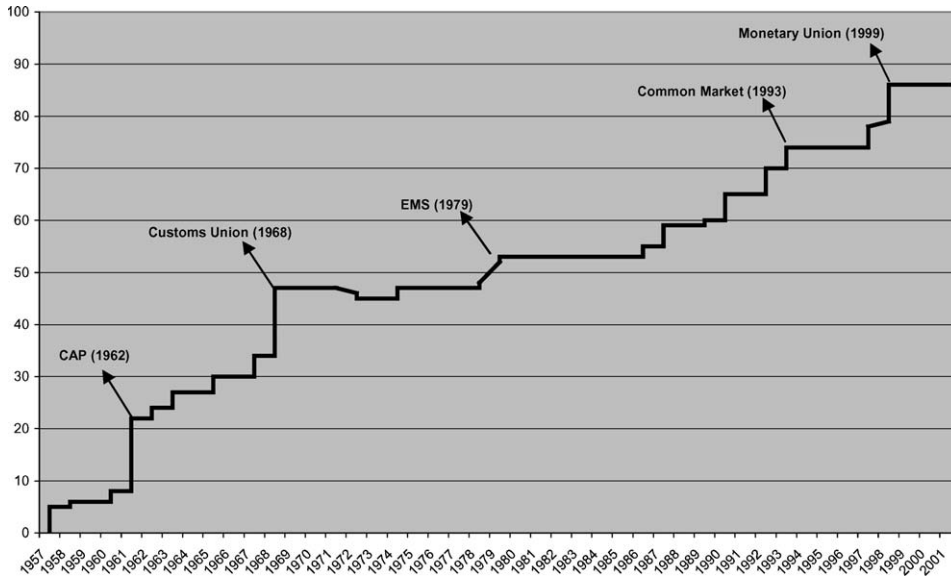


Figure 1. Institutional index of integration for EU-6 (BE, DE, FR, LU, IT, NL) (1957–2001).

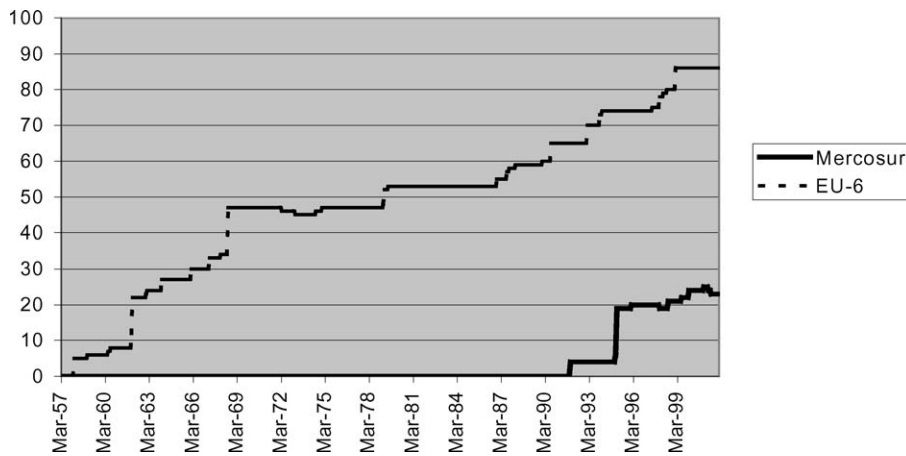


Figure 2. Institutional index of regional integration for Mercosur (1991–2001) as compared to EU-6 (1957–2001).

when such a decision started to be 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 scored. Second, especially in the European experience some Balassa stages tend to develop in parallel, which implies that the term *iestagel*, 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 scores can be assigned in parallel to each of the five stages.

1.1. Institutional integration in the European Union

Figure 1 outlines 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. The first is that the EU/euro area³ obtains a score as high as 86 out of 100 at the end of 2001. The EU/euro area can indeed claim to have achieved a developed common market, strong policy co-ordination, a single exchange rate policy for euro area countries (now permanently locked by a common currency), supranational institutions, and supranational laws (in several areas) enforced by the courts. If one used the EU as a yardstick to measure regional integration processes around the world, it may be expected that other existing arrangements obtain a much lower score. Nevertheless, the EU does not yet obtain the highest score possible of 100 even without considering the ultimate stage of Political Union.

The second feature is that, using the 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 half of the overall institutional integration process had been already completed. In July 1968 the EU represented already more than a customs union, since it already displayed some characteristics of subsequent Balassa stages. The second period can be identified between the start of the 1970s and the mid-1980s, and is characterised by sluggish progress in institutional integration, with the noteworthy exception of the European Monetary System (EMS) start in March 1979. Finally, in the third period, a considerable acceleration in regional integration can be observed: as a result, the EU/euro area can currently be classified as being somewhere between the stages of Economic Union (EUN) and total economic integration (TEI).

1.2. Institutional integration for Mercosur

Since the early 1990s, a process of revitalisation of Latin American sub-regional integration⁴ has accompanied the economic reforms being implemented in the countries of the region. Mercosur—established in 1991 by Argentina, Brazil, Paraguay and Uruguay—soon came to prominence due to its geographical size, a population of over 220 million, and a GDP in excess of USD 900 billion. Mercosur's final objectives 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. 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 of 2001–2002, 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 following the recent elections in Brazil and Argentina.

Despite its achievements, Mercosur ranks much lower than the EU in terms of degree of regional integration, with a score of 23 out of 100 at the end of 2001. Using the EU as a yardstick, the index of institutional integration for Mercosur accounts for only one quarter of the EU index at the end of 2001 (see Figure 2). This can be attributed not only to the “quantity” of institutional 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”—i.e., *how* the free trade area and customs union are actually implemented.

It is in the latter field that Mercosur might consider drawing some insights 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 unless they are implemented by corresponding national laws, and there is 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.

It may be observed here that European integration has always had strong political roots, motivations and purposes since its start. The political motivations of European integration are outside the scope of this paper. However, the deepening of institutional integration and the progress in many areas of economic integration that are discussed in the next section (such as commitment to bring inflation down to comparable low levels), reveal that European Countries have over time increasingly shared similar policy attitudes.

2. Measuring and quantifying economic integration in Europe and Latin America

2.1. Measuring economic integration

We provide now some selected measures of economic integration. We look at variables that have been suggested by the optimum currency area (OCA)

theory, but also include other variables that have not been explicitly mentioned by the OCA theory but that provide some complementary facets of economic integration.⁵ One limitation we face is that there are not as many variables illustrating the path of economic integration available for Latin America as for Europe. The following are the variables we collected.

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 and/or that the economies of the two countries are highly interdependent (Artis and Zhang, 1998a, 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, detrended 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 by the difference of the 12-month percentage changes in the consumer price indices, and alternatively by the correlation coefficient between each country and the region's average.

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 integration by allocating resources more efficiently and reducing transaction costs. Financial 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 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 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.

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 low. For the European country groupings exchange rate variability is calculated on the basis of the "region" average of each country's moving average 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, where no currency plays the role as anchor, we take the same measure using each country's average bilateral exchange rates variability vis-à-vis all other regional currencies.

2.2. *The development of economic integration in Europe and Latin America*

We first 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" that includes Mercosur countries, the members of the Andean Community (Bolivia, Colombia, Ecuador, Peru and Venezuela), Chile and Mexico. For Europe, we consider the period 1957–2001 and the following six sub-periods:

| Sub-period | Main characteristics |
|----------------------|---|
| March 1957–Aug. 1971 | Bretton Woods system of fixed exchange rates. |
| Sept. 1971–Feb. 1979 | Very volatile exchange rates; failed attempt to establish an exchange rate mechanism (the “Snake”); major recession in 1973–1975. |
| March 1979–Aug. 1987 | “Soft ERM”: Introduction of EMS with frequent realignments, especially until 1983. |
| Sept. 1987–Dec. 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. |
| Jan. 1993–Dec. 1998 | “Pre-EMU”: Enhanced nominal convergence and run-up to monetary union. |
| Jan. 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:

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

Table 2 shows the list of the eleven indicators of economic integration described above 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.

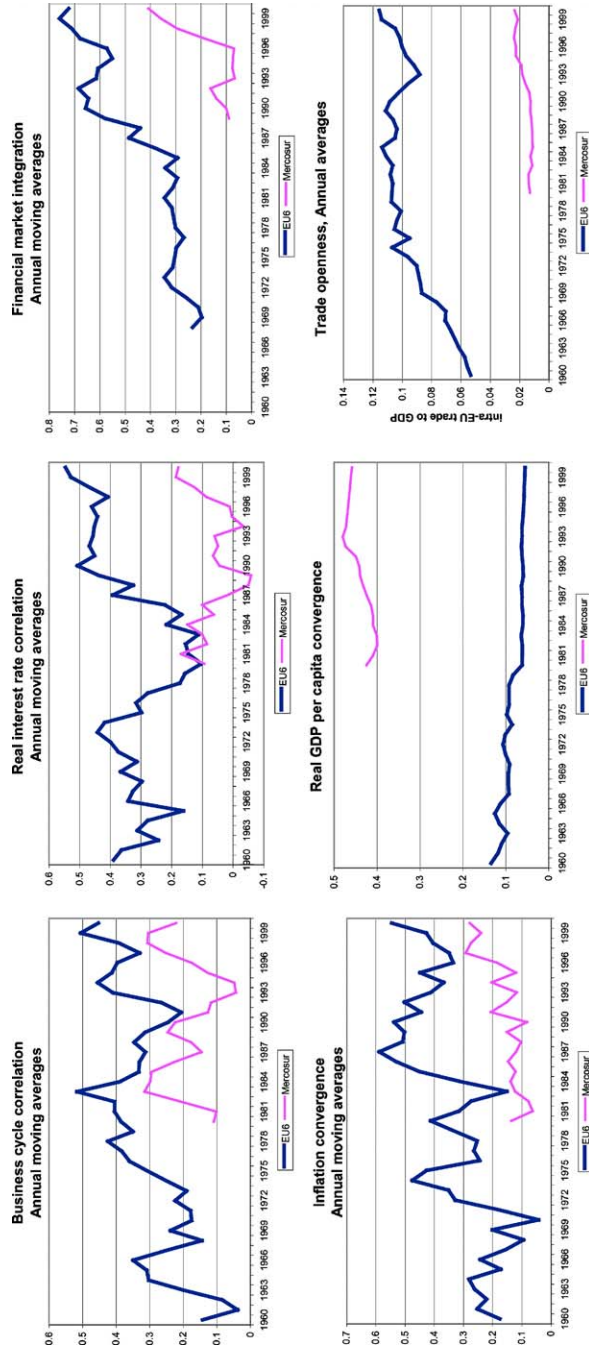
As expected, both EU-6 and the euro area are generally a much more integrated economic area than Latin America over time (not only than the selected 11 Latin American countries, but also than Mercosur countries). Overall, comparing the levels of economic integration emerging from the above tables and 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). Regional trade integration and openness are in Europe much larger than in Latin America

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 openness | Trade integration openness | Financial market integration | Financial market openness |
|-------------------------|----------------------------|----------------------------------|------------------------------|--------------------------------|-----------------------------------|----------------------------|-------------------------------|----------------------------|----------------------------|------------------------------|---------------------------|
| Euro area | | | | | | | | | | | |
| 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 |
| EU 6 | | | | | | | | | | | |
| 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 |
| Latin America 11 | | | | | | | | | | | |
| 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 |
| Mercosur | | | | | | | | | | | |
| 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.



(Continued on next page.)

Figure 3. Comparing economic integration in Latin America and Europe.

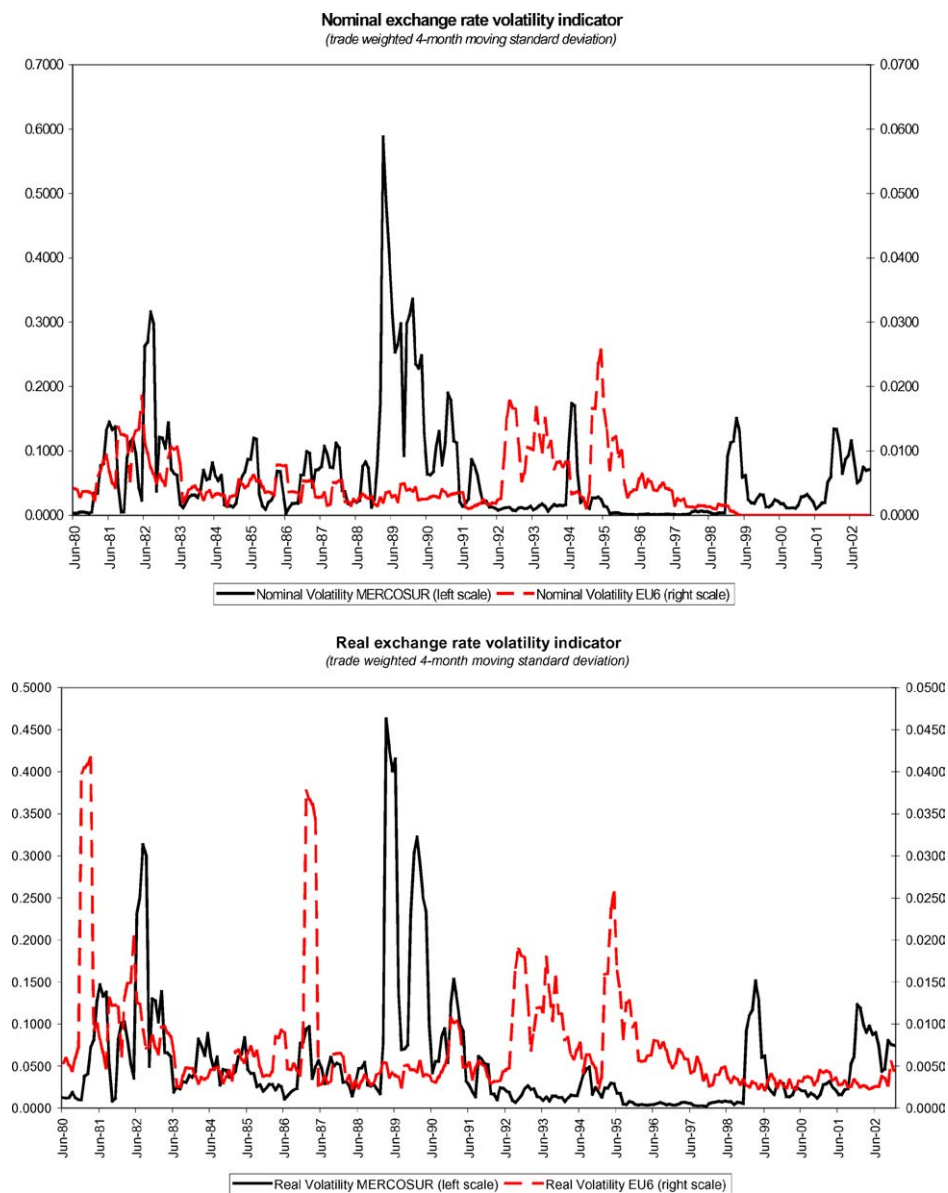


Figure 3. (Continued).

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. Finally, Figure 3 highlights that in the period 1980–2002 nominal (real) exchange rate variability in Mercosur was, on average, about 10(7) times higher than in the EU-6 (notice the differences in the LHS and RHS scale of volatility between the two regions).

3. Testing for the causal link between institutional and economic integration: A VAR analysis

We can now turn to the main question raised in this study: testing for the hypothesis that institutional integration interacts with economic interdependence at the regional level. The analysis focuses on the six founding members of the European Community (i.e., the EU-6). The rationale for this is twofold. First, this group of countries is sufficiently homogeneous as regards the path followed in institutional regional integration. Secondly we were able to collect sufficiently long time series for the EU-6, namely from 1960 to 2000, which is not the case for other regions such as Latin America.

The main objective of the VAR analysis is to extract structural shocks from the model, which have an economic meaning. In other words, the VAR model allows us to test whether it is innovations in institutional integration that drive economic integration, or whether the causality runs in the opposite direction. Economic integration is captured by variables such as trade integration, the correlation in real interest rates changes, inflation convergence, real GDP per capita convergence, and real exchange rate variability.

We employ a simple, non-structural VAR model that consists of a system of jointly estimated reduced form equations that places very few restrictions on the lag structure, so that each variable is treated symmetrically and regressed on a common number of lags for all variables. In such a system every variable on the left-hand side of the system is treated as endogenous. The possibility of treating all variables as endogenous is very appealing for the purpose of our investigation as this allows us to test for the direction of causality in the system.

To implement the identification of the structural shocks we impose a minimal amount of restrictions. In fact, using the so-called Cholesky decomposition, we assume that the variables do not have contemporaneous effects on each other. That means that only lagged variables appear on the right-hand side of the VAR

system. Its specification is given by:

$$X_t = v + \sum_{i=1}^p \Gamma_i X_{t-i} + \varepsilon_t \quad (1)$$

where v is a vector of constants, ε white noise disturbances,⁶ Γ is the vector of parameter estimates and X_t is a vector of our six variables of interest, given by the following:

- *REV* is the indicator of real exchange rate variability among countries in the EU-6 group as defined in the previous section.
- *INST* is our index of institutional integration in EU-6.
- *Tiopen* is a measure of trade openness within EU6 given by total intra regional trade over regional, EU-6 wide, GDP.
- *Rconv* is the annual correlation of percentage changes in monthly real interest rates.
- *CPIconv* is the standard deviation of consumer price inflation in EU-6 from the average of the three least inflationary countries.
- *GDPconv* is the standard deviation of the log of real GDP per capita in EU-6.

It is important to note that a higher value of the latter two variables implies a lower degree of inflation and real GDP per capita convergence. All variables are stationary or trend stationary according to standard Augmented Dickey Fuller unit root tests. The trend stationarity of the variables included in the VAR justifies our use of a vector of constants on the right hand side of the VAR. The lag length (p) has been set at 2 according to standard lag order selection criteria and in order not to exhaust too many degrees of freedom.

The model has been estimated and impulse response functions have been constructed. Impulse response functions permit us to see how each endogenous variable react over time to an exogenous positive shock in each variable included in the VAR system. Responses to shocks have been analysed over a time span of 15 periods (or years) and provide a practical way to visually represent the behaviour of the endogenous variables in response to the various shocks. Wide error bands of ± 2 standard errors are depicted to give an idea of significance level of results (see Figures 4 and 5).⁷

We now turn to the results of the above-described VAR specification. In particular we will look at impulses emanating from real exchange rate variability (*REV*), one of the key variables proxying the degree of actual economic integration, and institutional change (*INST*). Practically we will try to trace out whether and how exogenous innovations to these two variables affect other economic variables and the index of institutional integration.

Turning to the first of these variables, shocks in *REV*—real exchange rate variability—affect all other variables included in the VAR. Such shocks have a persistent, though relatively small negative effect on trade integration in EU-6.

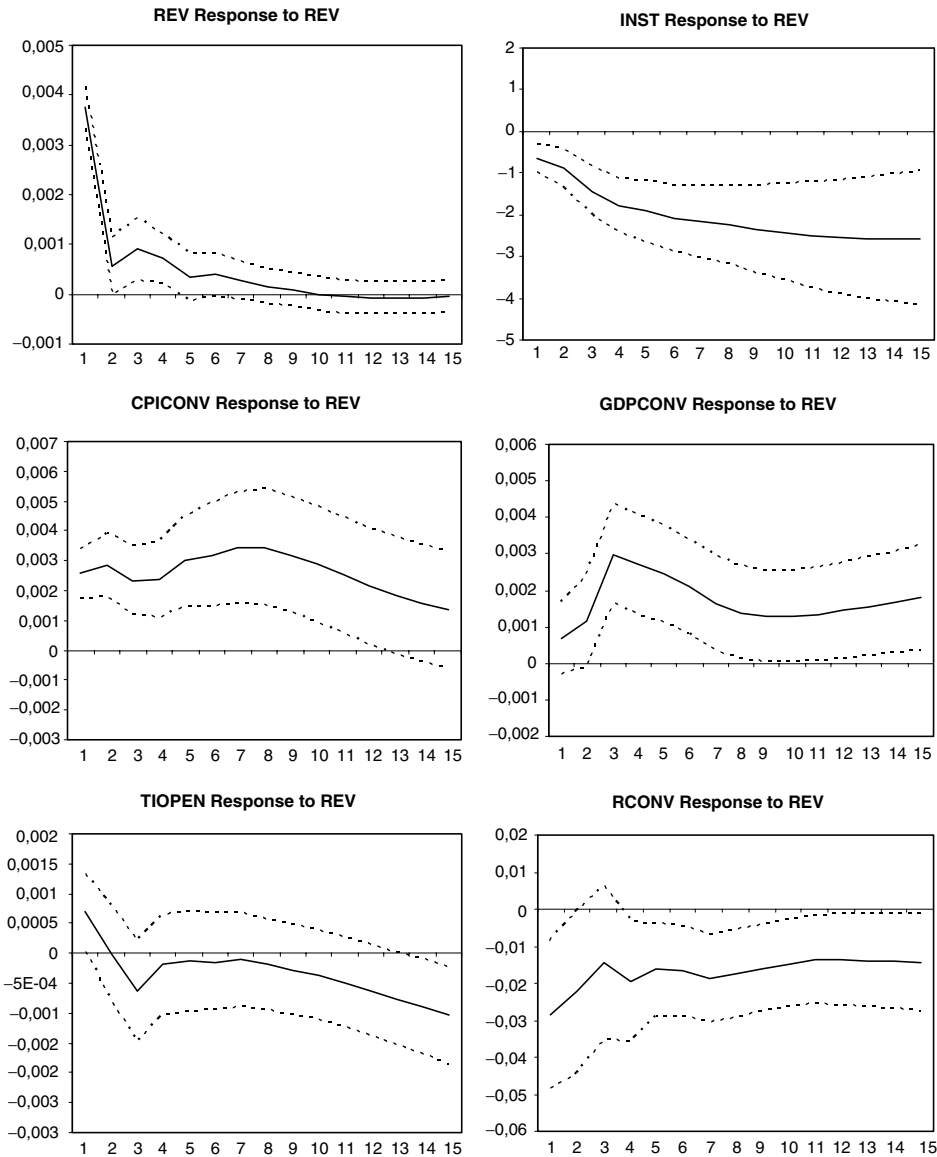


Figure 4. Impulse response functions to Cholesky one standard deviation shock in real exchange rate variability.

This implies that episodes of higher real exchange rate variability are associated with periods of lower trade integration among the founding members of the European Community. This result is consistent with both the general conclusions of the most recent literature and econometric evidence on the link

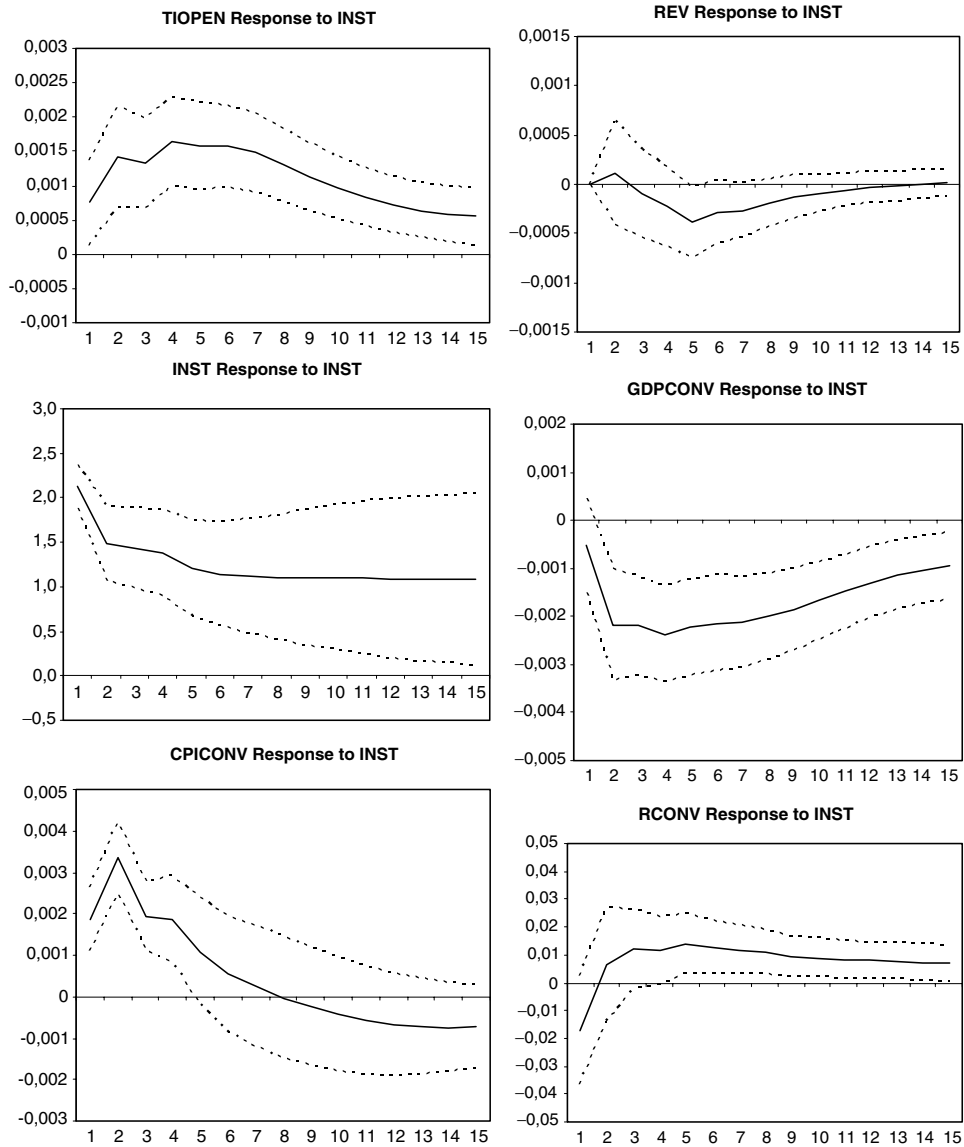


Figure 5. Impulse response functions to Cholesky one standard deviation shock in the institutional index of regional integration.

between trade and exchange rate variability, according to which exchange rate volatility has significant negative, even if small, effects on trade.⁸

Second, shocks in real exchange rate variability have negative effects on three other economic variables included in the VAR (see Table 3). An increase

Table 3. VAR parameter estimates, standard deviations and significance levels.

| | REV | INST | CPICONV | GDPCONV | RCONV | TIOPEN |
|----------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| REV(-1) | 0.195332 (0.20713) (0.94304) | 112.4226 (122.902) (0.91474) | 0.758486 (0.30627) (2.48)** | -0.084109 (0.34514) (-0.24370) | -11.92242 (7.18804) (-1.66)* | -0.057917 (0.22385) (-0.25873) |
| REV(-2) | 0.062047 (0.19808) (0.31324) | -105.9343 (117.532) (-0.90132) | -0.114168 (0.29289) (-0.38980) | 0.648427 (0.33006) (1.97)** | 1.518381 (6.65472) (0.22817) | -0.235180 (0.21407) (-1.09862) |
| INST(-1) | 0.000162 (0.00031) (0.52539) | 0.855962 (0.18305) (4.67623) | 0.001248 (0.00046) (2.73594) | -0.000941 (0.00051) (-1.83)* | 0.003902 (0.01036) (0.37646) | 0.000545 (0.00032) (1.71)* |
| INST(-2) | -5.41E-05 (0.00030) (-0.17850) | 0.103368 (0.17984) (0.57478) | -0.001110 (0.00045) (-2.48)** | 0.000463 (0.00051) (0.91625) | -0.003149 (0.01018) (-0.30923) | -9.41E-05 (0.00033) (-0.28725) |

VAR analysis: 6 variables.

Sample(adjusted): 1962 2000.

Standard errors & *t*-statistics in parentheses.

* (90% significance level),

** (95% significance level).

in exchange rate variability brings about lower inflation convergence and GDP per capita convergence within the EU-6 countries, and reduces the correlation among real interest rates. As can be seen from the impulse response function in the charts, after a positive shock in REV, CPIconv and GDPconv react positively, meaning that higher exchange rate variability is associated with a higher standard deviation and hence weaker convergence in inflation and real GDP per capita among EU-6 countries. On the other hand Rconv reacts negatively, meaning that higher exchange rate variability is correlated with the correlation in the changes of real interest rates among EU-6 countries (see also Table 3).

Turning to the second of the variables, positive shocks to institutional integration (INST), i.e. further progress in the process of institutional integration within EU-6, are associated with persistent and significant positive effects on almost all the economic variables included in the VAR.

A further step in institutional integration brings about higher trade integration, stronger GDP per capita convergence within the EU-6 countries and an increase in the correlation among real interest rates. As can be seen from the impulse response functions, after a positive shock in INST, GDPconv react negatively, meaning a lower standard deviation in real GDP per capita among EU-6 countries.⁹ On the other hand Rconv and Tiopen react positively meaning a higher correlation in the real interest rates percentage changes and a deepening of trade integration in EU-6. As far as CPIconv is concerned, institutional change leads to higher inflation convergence only in the long run even, although

the negative correlation between INST and CPIconv in the long run is not significant.¹⁰

In summary, the VAR analysis provides evidence in favour of the existence of important linkages between exchange rate stability, institutional developments and the deepening of economic integration. In particular, real exchange rate stability and institutional progress towards a higher degree of integration along the Balassa stages seem to have played a role in reinforcing trade integration, convergence in price and real GDP per capita, and higher correlation in real interest rates among EU-6 countries.

4. Conclusions

This paper tests for the hypothesis that institutional integration interacts with economic integration at the regional level. We have started by constructing an original index of institutional integration that is based on our judgmental, though highly standardised, assessment of the effective implementation of various regional policy initiatives. This has allowed us to draw some conclusions about the dynamics of institutional integration in the EU-6 and Mercosur over time.

We have then studied diverse measures of economic integration—capturing trade and financial market integration as well as business cycle synchronisation—for both the EU and Latin America. We have found that European countries have experienced sharp accelerations of economic integration in the 1960s and the 1990s based on various criteria of integration (some of which are borrowed from the OCA literature). By contrast, Latin American countries have gone through similar waves of periods with fast and slow progress in economic integration.

Combining the institutional indicator with those of economic integration, we have then asked whether there is evidence that institutional integration fosters economic integration. A VAR analysis confirmed that exogenous changes in institutional integration indeed lead to deeper economic integration.

Are there some possible insights from the long European experience with regional integration for Latin America today? Latin American countries are currently confronted with two main options concerning 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).

What the European experience as presented here tells us is that the process of regional integration is a long one that can take many decades to complete and requires a strong political will and commitment from its participants. This process may also not be a continuous one, but may be characterised even by extended periods with little or no apparent progress, such as much of the 1970s in Europe. Another important implication of the European experience as presented in the paper is that strong efforts to strengthen institutional integration can indeed play a crucial role in furthering and deepening the degree of economic integration.

Finally, over time the EU has experienced a dynamic interaction between the process of institutional integration and the fulfilment of certain criteria of economic integration, as for instance identified by OCA theory. While this result is 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.

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Notes

1. The final step, which goes beyond the five stages identified in the Balassa's contribution and is not discussed in this paper, is political union.
2. The full methodology, the scoring system, the detailed evolution of the index of regional integration, as well as the path of the member countries are discussed in Dorrucchi et al. (2002), Annex 1. This methodology is presented “step-by-step” so as to allow the readers to alter the outcome should they wish to change any of the hypotheses or judgements.
3. 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.

4. Regional integration in Latin America did not start in the 1990s. Early steps of integration are the Cartagena Agreement founding the Andean Group (1969) and the Chaguaramas Treaty founding the Caribbean Community (1973).
5. The starting point of the OCA theory are the seminal contributions by Mundell (1961), McKinnon (1963) and Kenen (1969). For recent surveys see Tavlas (1993), DeGrauwe (2000), McKinnon (2001) and Mongelli (2002).
6. In any of the 6 equations that have been estimated, residuals are normally distributed and passed standard test for heteroskedasticity and serial correlation.
7. The correlation coefficients between the white noise components of the VAR are very small and tend to be insignificantly different from zero. In these circumstances, the ordering of the variables in the VAR is not important. In fact, as a robustness check, our results do not change with the different ordering of the variables.
8. See for example Frankel and Wei (1993) and Dell'Ariceia (1999).
9. This result is very much consistent with the Ben David (1993) paper in which the author finds evidence that supports the view according to which higher trade liberalisation in Europe has brought about considerable income convergence. The phenomenon of real per capita income convergence has been in fact remarkable above all for those countries, such as the EU-6 ones, that fostered trade integration more intensively and quickly than other European countries.
10. Looking at variance decomposition institutional changes explain a significant part of the variance of *GDPconv* and *Tiopen*. After 7 periods, the index of institutional integration explains around 20% of variance of *Tiopen* and of *GDPconv*. Looking at Granger causality test INST seems to Granger cause trade integration and real interest rates correlation and to a lesser extent real GDP per capita convergence.

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