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WORKING PAPER 126

MONETARY UNIONS, EXTERNAL SHOCKS AND ECONOMIC PERFORMANCE

SEBASTIAN EDWARDS

WITH A COMMENT BY ENRIQUE ALBEROLA

EUROSYSTEM

Statement of Purpose

The Working Paper series of the Oesterreichische Nationalbank is designed to disseminate and to provide a platform for discussion of either work of the staff of the OeNB economists or outside contributors on topics which are of special interest to the OeNB. To ensure the high quality of their content, the contributions are subjected to an international refereeing process. The opinions are strictly those of the authors and do in no way commit the OeNB.

Editorial

On February 24 - 25, 2006 an international workshop on "Regional and International Currency Arrangements" was held in Vienna. It was jointly organized by George Tavlas (Bank of Greece) and Eduard Hochreiter (Oesterreichische Nationalbank). Academic economists and researchers from central banks and international organizations presented and discussed current research and tried to review and assess the past experience with and the future challenges for international currency arrangements. A number of papers and the contributions by the discussants presented at this workshop are being made available to a broader audience in the Working Paper series of the Oesterreichische Nationalbank and simultaneously also in the Working Paper Series of the Bank of Greece. The papers and the discussants comments will be published in *International Economics and Economic Policy*. This volume contains the fifth of these papers. The first ones were issued as OeNB Working Paper No. 120 to 122 and No. 125. In addition to the paper by Sebastian Edwards the Working Paper also contains the contribution of the designated discussant Enrique Alberola.

June 5, 2006

MONETARY UNIONS, EXTERNAL SHOCKS AND ECONOMIC PERFORMANCE: A LATIN AMERICAN PERSPECTIVE

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Draft for conference presentation: February 14, 2006

ABSTRACT

During the last few years there has been a renewed analysis in currency unions as a form of monetary arrangement. This new interest has been largely triggered by the Euro experience. Scholars and policy makers have asked about the optimal number of currencies in the world economy. They have analyzed whether different countries satisfy the traditional "optimal currency area" criteria. These include: (a) the synchronization of the business cycle; (b) the degree of factor mobility; and (c) the extent of trade and financial integration. In this paper I analyze the desirability of a monetary union from a Latin American perspective. First, I review the existing literature on the subject. Second, I use a large data set to analyze the evidence on economic performance in currency union countries. I investigate these countries' performance on four dimensions: (a) whether countries without a national currency have a lower occurrence of "sudden stop" episodes; (b) whether they have a lower occurrence of "current account reversal" episodes; (c) what is their ability to absorb international terms of trade shocks; and (d) what is their ability to absorb "sudden stops" and "current account reversals" shocks. I find that belonging to a currency union does not lower the probability of facing a sudden stop or a current account reversal. I also find that external shocks are amplified in currency union countries. The degree of amplification is particularly large when compared to flexible exchange rate countries.

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I. Introduction

During the last few years there has been a renewed interest in analyzing the costs and benefits of monetary unions. To a large extent this interest has been the result of the launching of the *Euro* in January, 1999. Scholars, policy makers and analysts have asked what is the optimal number of currencies in the world. More specifically, they have asked whether it would make sense for some countries to give up their national currencies and either adopt another country's currency, or join other nations in creating a regional currency. The first option – adopting another country's currency – has generally been known as the "dollarization" question; the second option – creating a multi-nation currency – is known as the "independent currency union" question.[1]

At the end of the 19th century the world had a relatively small number of currencies. There were a number of monetary unions – the two better known ones were the *Latin Monetary Union* and the *Scandinavian Monetary Union* --, and many countries and territories used other county's currency as legal tender. These arrangements were dictated both by political as well as by geographical and economic considerations. This is illustrated by the fact that the dependencies of Great Britain did not use exclusively sterling; they relied on a variety of currencies, including the U.S. dollar and the Indian Rupee (Muhleman, 1895).

Historically, the emergence of national currencies has been associated with political considerations and, in particular, with sovereignty. Indeed, one of the first measures newly independent countries took during the nineteenth and twentieth century was to establish their own national currencies. In his well-known article on optimal currency areas Mundell (1961) cited the following quote from John Stuart Mill:

> "[A]lmost all independent nations choose to assert their nationality by having, to their own inconvenience and that of their neighbours, a currency of their own." (1894, p. 176).

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[1] "Dollarization" is used as a general term, even if the country were to adopt a currency other than the dollar, such as the Euro, or the Pound Sterling.

It is perhaps for this political reason that, historically, in the Latin American nations there have been limited discussions on the creation of regional currencies. To be sure, some Latin American countries have become officially dollarized – Panama since 1903, Ecuador since 2000 and El Salvador, since 2001--, and some, including Argentina in the late 1990s and early 2000s have seriously considered dollarization. However, discussions on the creation of regional, or sub-regional, monies have never captured the imagination of Latin American politicians or scholars. In 1926, for example, there was a proposal to create a monetary union comprising Argentina, Chile, Uruguay and Paraguay. Although the supporters of this policy were prominent thinkers and politicians, and went as far as detailing the operational features of the union, there was very little political support for the idea.[2] Proposals to create a monetary union in Central America, or the Andean countries or, more recently, in *Mercosur* have never been more than academic exercises. In a way this is surprising, since, at least in principle, certain groups of Latin American nations would seem to satisfy some of the basic criteria for an optimal currency area (OCA).[3]

During the last few years a number of papers on (potential) monetary unions around the world have been published.[4] Most of these works have analyzed empirically whether particular groups of nations – including Latin American countries – satisfy the traditional and basic criteria for joining a monetary union. In particular, most of these studies have analyzed: (a) the synchronization of the business cycle across countries and with respect to major nations such as the U.S. or the EU; (b) the degree of factor mobility within the potential monetary union; (c) macroeconomic convergence among the possible union members; and (d) the extent of trade and financial integration in the countries that would potentially form a monetary union (see Section II of this paper for a detailed, and selective, review of works on OCA in Latin America). More recently, an important body of work has argued that the traditional OCA criteria are endogenous to the monetary regime. In particular, the degree of trade and financial integration will tend to increase in

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[2] See Yañez, Bunge and Subercaseaux (1926). It is interesting to notice that this proposal did not include Brazil.

[3] See, however, the review of works on the issue presented in Section II of this paper.

[4] See, for example, the papers published in volume 13(2002) of the *North American Journal of Economics and Finance* (as well as the literature cited in those papers).

countries that share a common currency.[5] In Table 1 I present a list of countries (and territories) with currency unions; this list includes both dollarized countries as well as countries that belong to independent currency unions.

The purpose of this paper is to analyze a number of issues related to monetary unions, from a Latin American perspective. I take, however, a different perspective from that of most works on the subject. Instead of analyzing whether the Latin American countries satisfy the traditional OCA criteria, such as facing similar external shocks across countries, I analyze the empirical evidence on the economic performance of countries "*without a currency of their own*," and I interpret these results from the perspective of the Latin American nations. The empirical analysis presented in this paper is divided in two parts. First, I investigate whether belonging to a currency union reduces the probability of a country being subject to: (a) "sudden stop" of capital inflows; and/or (b) "current account reversals." Both of these are important questions, since the Latin American nations have traditionally been subject to significant fluctuations in capital flows, and have experienced a large number of current account crises (Edwards, 2004). Second, I analyze the ability of monetary union countries to accommodate three types of external shocks: (a) terms of trade shocks; (b) sudden stops of capital inflows; and (c) current account reversals. The question is whether, as opponents of monetary unions have argued, countries without a currency of their own incur in larger costs as a result of external shocks. Again, this is a highly relevant issue for the Latin American nations, since they have historically had highly volatile terms of trade, and have been subject to wide variations in external conditions (Edwards and Levy-Yeyati, 2005). In performing this analysis I use a new and large cross-country data set, and I control for the role of other relevant variables.

The rest of the paper is organized as follows: In Section II I review the literature on currency unions in Latin America. I show that the vast majority of these papers analyze whether the Latin Countries – or a subgroup of them – satisfy the OCA criteria. In Section III I use a new comparative data set to analyze economic performance in countries with currency unions, from a Latin American perspective. More specifically, I investigate whether countries without a currency of their own have a lower probability of

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[5] See, for example, Frankel and Rose (1999) and Rose and Engel (2002).

experiencing two type of shock that are common in Latin America – sudden stops of capital inflows and current account reversals. In performing this analysis I use random-effect probit regressions on pooled data. In Section IV I analyze the way in which external disturbances affect real growth in countries with different monetary regimes. I present a model of the dynamics of GDP per capita growth, and I investigate whether the impact of external shocks on growth is different in countries without a currency of their own, or monetary union countries, and in countries with a national currency. Finally, in Section V I provide some concluding remarks, and a word of caution on how to interpret the empirical results presented in this paper. There is also a data appendix.

II. Monetary Unions in Latin America

In this section I discuss briefly and selectively the literature on currency unions in Latin America. I define a country as belonging to a currency union if it does not have a currency of its own, and uses a "common currency" with other countries. This "common currency" could be either another nation's currency (i.e. the U.S. dollar) or it could be a regional currency. The section is divided in two parts: First, I briefly deal with the theoretical literature on optimal currency areas. In particular, I discuss what has come to be known as the "OCA criteria," or prerequisites for a country successfully joining a currency area. Second, I provide a brief review of the empirical literature on currency unions in Latin America.

II.1 Optimal Currency Areas: Theory and Policy Criteria

In his seminal 1961 paper Robert Mundell developed the modern theory of optimal currency areas. The main conclusion of his analysis was that "the optimum currency area is the region." By this, Mundell meant that when it comes to determining the scope of specific currency, the relevant entity is *not* a nation, but rather a region characterized by price and wage flexibility, factor mobility, trade integration and similar external shocks. He argued that the in North America there were two optimal currency areas: one corresponding to the eastern United States and Canada, and the other corresponding to the western U.S. and Canada.

Although Mundell's original contribution is not technical – indeed, there isn't a single equation or diagram in the paper --, he was very explicit in determining his

optimality criteria. According to him, "[O]ptimality is here defined in terms of the ability to stabilize national employment and price levels' (Mundell 1961, p. 179). That is, his criterion is perfectly equivalent to minimizing a loss function on the square deviations of employment from its long term trend level, and of inflation from its target. In that sense, Mundell's criteria of optimality is consistent with that used in modern macroeconomic analyses.

Subsequent research attempted to make Mundell's theory operational, by developing a "checklist" of criteria that countries should satisfy in order to qualify as candidates for a (successful) currency union.[6] Generally speaking, it was thought that in countries than satisfied these criteria the benefits of joining a currency union exceeded the costs of doing so. Initially this "checklist" was restricted to the type of real and structural variables and factors emphasized by Mundell's original article. With time, a number of macroeconomic, political, institutional and monetary variables have been added to this checklist.

By now the list of OCA criteria, or main prerequisites for joining a currency union, has grown significantly. It may be summarized by the following "*OCA Decalogue*":[7]

- Factor mobility, and in particular labor mobility, across the members of the potential union.
- High level of trade in goods across the members of the union.
- Different (or diversified) composition of output and trade across countries.
- Price and wage flexibility across members of the union.
- Similar inflation rates across countries.
- Financial markets should be integrated across countries.
- Absence of "fiscal dominance" in the individual countries.
- Low, and similar, levels of public sector debt in the different countries.

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[6] Another two important early contributions are McKinnon (1963) and Kenen (1969),

[7] See, for instance, Bayoumi (1994), Eichengreen and Bayoumi (1997), De Grauwe (2001) and Tavlas (1991, 1992).

- Similarity (or synchronization) of external shocks to which the different countries are exposed to.
- Political coordination across countries.

The main point of this "*Decalogue*" is that if these conditions are met, the members of the union would not need to rely heavily on (bilateral) exchange rate changes when subject to external shocks. In this case there will be a reduced need for implementing "expenditure switching policies," and the benefits of a currency union – in terms of enhanced credibility, lower transaction costs, and lower and more stable inflation – would exceed the (potential) costs arising from giving up the exchange rate as a policy tool. As Tavlas (1993) and Mongelli (2002), among others, have pointed out, such an extensive list of prerequisites introduces a number of practical policy problems. These include: (a) the need to establish a ranking of criteria according to their importance; and (b) how to deal with cases when a potential OCA member satisfies some of the criteria, while another potential member satisfies a different subset of them. The Euro zone, for instance, prioritized fiscal, monetary and financial considerations through the *Maastricht Treatise*. This, however, needs not be the case for other currency unions.

One of the costs of a belonging to a currency union is that member countries give up monetary independence.   However, the extent to which monetary independence is actually lost will depend on the exact nature of the monetary union. If the country in question unilaterally adopts another nation's currency – as in the case of unilateral dollarization – monetary independence will be fully lost. Moreover, in this case, seigniorage will also be lost.   In Latin America, for example, this has been the case in Panama, Ecuador and El Salvador.[8] If, on the other hand, a new common currency is adopted, monetary independence will only be lost partially. This is so because members of the union will be represented in the governance structure of the new common central bank, and, at least in principle, would have a say on how the common or regional central bank policies are determined.

There are circumstances, however, when loosing monetary independence may not be a cost. This would be the case, for instance, if the country in question has historically

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[8] See Levy-Yeyati and Sturzenegger (2003).

abused this independence, and has generated very high levels of inflation. Indeed, under these circumstances giving up the national currency and joining a currency union is a way of "tying the policy makers' hands," and achieving *credibility*. This "credibility effect" of joining a monetary union – or more precisely, of joining a *credible* monetary union – has been emphasized with respect to the Euro zone and the new EU members from Central and Eastern Europe. It has also been discussed in the Latin American context as one of the advantages of (unilateral) dollarization. This point was made by Dornbusch (2001), who argued that by achieving credibility, Latin American countries that dollarized would experience a decline in (real) interest rates, and, thus, higher investment and faster growth.

As a number of authors have argued, many of the criteria listed in the "*OCA Decalogue*" listed above are *endogenous* to the monetary and exchange rate regime (Frankel and Rose, 1998). More specifically, (neighboring) countries that share a common currency will experience an increase in bilateral international trade in goods, a point forcefully made by Rose (2000), and Rose and Van Wincoop (2001), among others. Edwards (1999), and Powel and Sturzenegger (2003), on the other hand, have investigated the way in which the monetary regime affects interest rate behavior and the cost of capital, and have argued that a common currency will tend to increase the degree of financial integration. An implication of this endogeneity argument is that the "*OCA Decalogue*" should be analyzed in a forward-looking fashion, trying to determine what would be the effect of adopting a common currency on many of these variables and criteria once the union is implemented.

II.2 Currency Unions in Latin America: A Selective Review

Most studies on OCA in Latin America have analyzed whether the countries in the region satisfy the OCA criteria, or, more specifically, a subset of them. In this subsection I review some of the most important contributions to this literature

In an influential early paper, Bayoumi and Eichengreen (1994) used Vector Auto Regressions to construct series of supply and demand disturbances in three regions: Europe, Asia and the Americas.[9] They then analyzed whether these disturbances were symmetrically distributed across the different countries in each of the regions. Their

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[9] The Americas include 13 nations, including those in NAFTA and *Mercosur*.

results indicate that correlations of both output and inflation disturbances were low in the Americas. Moreover, the groups of countries in the America's region that exhibited a somewhat higher degree of correlation did not correspond either to NAFTA or *Mercosur*. For instance, the group with the highest co-movements in output and prices was Brazil, Ecuador and Peru. The authors conclude that there is no evidence supporting the formation of a currency union involving Latin American countries – either among themselves, or with the U.S. or Canada. Eichengreen (1998) extended this work, and analyzed whether the countries of *Mercosur* – at the time formed by Argentina, Brazil, Paraguay and Uruguay – constituted an OCA. His analysis was triggered by the perceived instability between the bilateral exchange rate between the Brazilian and Argentine currencies. His empirical analysis concentrated on understanding the nature and consequences of exchange rate variability within the *Mercosur* nations. To do this he regressed alternative measures of exchange rate volatility on four of the "OCA criteria": synchronicity of output disturbances, commodity composition of trade, bilateral trade, and country size. He concludes that in the second half of the 1990s real exchange rate volatility in the *Mercosur* nations was significantly larger than what his model predicted. He argued, however, that a regional currency was not an effective option for reducing volatility; in his view the countries of *Mercosur* did not satisfy many of the OCA criteria.

Licandro Ferrando (2000) and Lavagna and Giambiagi (2000) also analyzed whether the countries of *Mercosur* satisfied (some of) the OCA criteria listed in our "*Decalogue*." Licandro Ferrado (2000) focuses mostly on one of the synchronicity of real shocks. He constructs measures of supply shocks for *Mercosur*, NAFTA and the EU and analyzes the extent to which these are correlated across countries. He concludes that the degree of correlation among *Mercosur* nations is significantly lower than that of EU nations. Shocks correlations among NAFTA countries are somewhat higher than in *Mercosur*. His conclusion is that *Mercosur* is far from satisfying the OCA criteria. Lavagna and Giambiagi (2000) take a somewhat different approach, and concentrate on macroeconomic convergence and political coordination. After analyzing historical data for Argentina and Brazil, and simulating macroeconomic conditions, the authors concluded that in (late) 1998 the large countries of *Mercosur* were not ready for forming a monetary union.

Larrain and Tavares (2003) use data for South and Central American countries to analyze the extent to which some of the OCA criteria are satisfied. An important contribution of their paper is that they make a distinction between two types of currency unions: dollarization and regional currencies. They use an approach similar to that of Eichengreen (1998) and use regressions to analyze the determinants of real exchange rate volatility. They also analyze the degree of asymmetry (or lack of synchronization) of output shocks, the composition of exports, and the extent of bilateral trade. Based on their analysis they conclude that dollarization maybe an option for the Central American nations; neither dollarization nor a regional currency appears to be a good option for South America.

Horchreiter and Siklos (2002) considered both static and dynamic arguments in their analysis of the potential for currency unions in Latin America. These authors centered their analysis on the nature of aggregate shocks, fiscal policy, and business cycle synchronicity. They investigated whether a treatise in the nature of Maastricht would help the Latin American nations achieve macroeconomic convergence. Their conclusion was that "the LAC countries are not generally good candidates for monetary union." Berg, Borensztein and Mauro (2002) also analyze the OCA criteria for a large group of Latin American nations. They focus on: (a) the pattern of trade; (b) output growth co-movements; (c) financial variables co-movement; (d) political coordination; and (e) credibility. They conclude that "an independent common currency does not appear to be warranted for Latin American countries," and that "there is no obvious case for dollarization."

In an extensive study, Hochreiter, Schmidt-Hebbel and Winckler (2002) analyzed Latin America's prospects for a currency union, from the perspective of the European experience. They make the important point that OCA criteria are dynamic, in the sense that countries that adopt a common currency tend to experience an improvement in some of the key OCA prerequisites, such as the volume of bilateral trade and the degree of financial synchronization. Based on the European experience, the authors emphasized the need to coordinate fiscal policy in OCA countries, the importance of labor mobility and flexibility, and financial integration and supervision. These authors arrived to two conclusions: "The available evidence on the costs and benefits of abandoning national

currencies suggest significantly less favorable conditions in LAC than in Europe." And, [D]ollarization seems to be more feasible for smaller LAC economies." In a related paper, Kopits (2002) draws lessons from the new EU accession countries for Latin America, and concludes that in the absence of better macroeconomic policy coordination the Latin nations are not good candidates for a currency union.

Belke and Gros (2002) analyze the effects of exchange rate and interest rate volatility on macroeconomic outcomes in the countries of the Southern Cone. They conclude that higher volatility has negative effects on both employment and private investment. The authors, however, caution on the implications of these findings for the currency union debate; a complete analysis of the issue, they point out, would require investigating other OCA criteria, including the possibility of coordinating macroeconomic (and especially fiscal) policies.

The paper by Panizza, Stein and Talvi (2003) is one of the few that provides an explicit and complete cost-benefit analysis of the decision to join a currency union. They analyze whether it would pay off for the Central American nations to give up their currencies and unilaterally adopt the U.S. dollar as legal tender.[10] They consider several benefits of dollarization, including lower real exchange rate volatility, increased credibility, reduced financial fragility, and a higher volume of intraregional trade. The main source of costs is the lost of monetary independence; the extent of these costs are related to the nature of real shocks, the degree of labor mobility, and the extent to which the monetary authorities are willing to use their independence (this is the "fear to float" issue). Their conclusion is that "several of the countries under study should give dollarization a serious consideration." Edwards and Magendzo (2003, 2006) analyzed the overall world experience with dollarization. They use a variety of statistical techniques, including matching coefficients and treatment regressions. Their findings indicate that dollarized countries have not had a different real GDP growth experience than countries with a currency of their own. Inflation has been significantly lower in dollarized countries, while GDP volatility was larger in dollarized economies.

After recognizing the endogeneity of many of the OCA criteria, Calderón, Chong and Stein (2002) investigated the likely effects of adopting a common currency on Latin

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[10] This, in fact, was done by El Salvador in 2001.

America's intraregional trade and business cycle synchronization. Their results suggest that, contrary to the findings by Frankel and Rose (1998) and Rose and Engel (2001) for the EU, the impact of a currency union on these two variables is rather small in the Latin American region.

Alesina, Barro and Terneyro (2002) use a very large data set to analyze the "best monetary anchor" for a number of countries; the alternative anchors considered are the US dollar, the euro, and the yen. Their analysis is based on the effects of monetary integration on trade, price volatility and output volatility. Their results suggest that there is an unambiguous "best anchor" for only a handful of Latin American nations: The Euro for Argentina, and the US dollar for Costa Rica and Honduras. However, the fact that for Mexico and Ecuador the Euro is the "best" anchor according to one of the criteria, casts doubts on this analysis. Tenreyro and Barro (2003) implement an instrumental variables approach to deal with the endogeneity of some of the OCA criteria. Their results indicate that sharing a common currency increases the volume of bilateral trade, increases the co-movements of national price levels, and decrease the co-movement of national outputs.

Powell and Sturzenegger (2003) analyzed an often forgotten endogenous aspect of currency unions: the effects of a common currency on financial integration and country risk. They use an event study methodology to analyze whether a reduction in currency risk – something that would automatically happen if a country unilaterally dollarizes – results in a decline country risk. Using European data they find that there is a positive (and causal) correlation between currency and country risk premia. However, the evidence for their group of Latin American countries is not as strong as the evidence for the European nations.

To summarize, most of the literature on (potential) currency unions in Latin America has focused on investigating whether the countries in the region – or a subgroup of countries – satisfy (some of) the traditional OCA criteria. Most of these papers have concluded that Latin America does not constitute an *optimal* currency union. The results discussed in this section also cast doubts on the desirability of subgroups of Latin American countries of joining a currency union.

III. Monetary Unions and External Crises: An Empirical Analysis from a Latin American Perspective

In this and next section I analyze empirically a number of issues related to monetary unions in Latin America.[11] However, in contrast with most of the existing literature reviewed above, I don't ask whether countries satisfy some of the OCA criteria. Instead, I use a new large data set to investigate the evidence on the effect of currency unions on economic performance. I focus on two aspects of performance that are particularly important for the Latin American nations: (a) the probability of facing external crises, in the form of either sudden stops of capital inflows, or large reversals of current account deficits. And, (b) the effects of different shocks on economic growth, under alternative exchange rate and monetary regimes, including currency unions. In this Section I deal with the first set of questions, while in Section IV I address the second set of issues.

III.1 Sudden Stops and Current Account Reversals in Latin America

Latin America's economic history has been characterized by recurrent and massive external crises. Large devaluations have rocked the economies of almost every country in the region at one point or another during the last six decades. Many of these crises had their origins on large "*sudden stops*" of capital inflows, and/or were characterized by large and very rapid "*current account deficits reversals.*"[12]

Table 2 presents tabulation data on the incidence of sudden stops for the period the period 1970-2001; Table 3 contains data on the incidence of current account reversals. In both Tables I have considered six groups of countries – industrial, Latin America and Caribbean, Asia, Africa, Middle East and North Africa, and Eastern Europe. Each Table also includes a Pearson test for equality of incidence across groups of countries. I have defined a "*sudden stop*" episode as an abrupt and major reduction in capital inflows to a country that up to that time had been receiving large volumes of foreign capital. More specifically, I imposed the following requirements for an episode to qualify as a "sudden stop": (1) the country in question must have received an inflow

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[11] In the empirical sections of this paper the "Latin American" countries include the countries that the International Monetary Fund groups in the Western Hemisphere region. These include Latin American and Caribbean nations.

[12] See, for example, Calvo and Talvi (2005) and Edwards (2004).

of capital (relative to GDP) larger than its region's third quartile during the two years prior to the "sudden stop." And (2), net capital inflows must have declined by at least 5% of GDP in one year.[13] On the other hand, a "*current account reversal*" – reversals, in short -- is defined as a reduction in the current account deficit of at least 4% of GDP in one year.[14]

As may be seen from Table 2, the global historical incidence of sudden stops has been 6.4%. Different regions, however, have experienced very different realities, with the incidence being highest in the Middle East (11.3%), and lowest in the industrial nations (3.7%). The Latin American nations have the second highest incidence of sudden stops, with almost 8% of all year-country observations.

The tabulation on current account reversals in Table 3 indicates that the aggregate incidence rate has been 12.8%. As may be seen, Latin America has had the highest incidence of current account at 16%; the industrial countries have had the lowest incidence at 2.4%.[15]

From an analytical perspective sudden stops and current account reversals should be highly related phenomena. There is no reason, however, for their relationship to be exactly one-to-one. Indeed, because of changes in international reserves, it is possible that a country that suffers a sudden stop does not experience at the same time a current account reversal. An analysis of the global data shows that for the complete sample (3,106 observations) 46.8% of countries subject to a sudden stop also faced a current account reversal. At the same time, 22.8% of those with reversals also experienced (in the same year) a sudden stop of capital inflows. The regional data show that joint incidence of reversals and sudden stops has been highest in Africa, where approximately 59.3% of sudden stops happened at the same time as current account reversals, and in Latin America where 25% of reversals coincided with sudden stops. For every one of the

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[13] In order to check for the robustness of the results, I also used two alternative definitions of sudden stops, which considered a reduction in inflows of 3 and 7 of GDP in one year. Due to space considerations, however, I don't report detailed results using these definitions.

[14] I also used an alternative definition. The qualitative nature of the results discussed below, were not affected by the precise definition of reversals or sudden stops. See Edwards (2004).

[15] As pointed out above, the Latin American nations have also been subject to recurrent large devaluation crises. Of course, these are eliminated if a country becomes "dollarized." Independent currency unions eliminate bilateral devaluations in the member countries; it is still possible, of course, that the common currency suffers a major devaluation relative to a convertible currency. This was the case of the CFA Franc in January, 1994.

regions, as well as for the complete sample, the Pearson χ^2 tests have very small p-values, indicating that the observed differences across rows and columns are significant. That is, these tests suggest that although there are observed differences across these phenomena, the two are statistically related. Interestingly, these results do not change significantly if different definitions of reversals and sudden stops are used, or if alternative configurations of lags and leads are considered.

Tables 4 and 5 look at current account reversals and sudden stops from a different perspective. They provide data on the incidence of these two phenomena for currency union countries and for countries with a currency of their own. Table 4 is a two-way tabulation for current account reversals, while Table 5 is a two-way tabulation for sudden stops. As may be seen, the incidence of both of these phenomena is higher for currency union countries than for countries with that have a national currency. As Table 4 shows, the incidence of current account reversals for currency union countries is 14.6%; the incidence for non-CU countries is 9.9%. From Table 5 it may be seen that the incidence of sudden stops is 13% for currency union countries and only 6.3% for non currency union nations. In both stables the Pearson chi-square test for the independence of rows and columns has a very low p-value.

III.2 An Empirical Model

A number of studies, including Edwards (2002, 2004) and Frankel and Cavallo (2004) have found that sudden stops and current account reversals are costly in terms of growth. Countries that experience either of these phenomena have gone through significant and rather large declines in the rate of GDP growth. An important question, and one that I address in this Section, is whether a country's exchange rate/monetary regime affects the probability of experiencing a sudden stop or a current reversal. In particular, I am interested in understanding whether countries that belong to monetary unions have had a lower probability of experiencing these phenomena. A positive answer to this question would be important for the Latin American nations, as it would provide them with an institutional arrangement that would help them reduce the incidence of these negative events. In other words, reducing the probability of sudden stops and/or current account reversals would constitute an additional "benefit" of currency unions, a

benefit that should be taken into account when evaluating the net effects of abandoning the country's currency, and joining a union.

In order to understand further the forces behind sudden stops and current account reversals, and to investigate the (potential) role of currency unions, I estimated a number of random effect panel equations on the probability of experiencing these two phenomena. The empirical model is given by equations (1) and (2):

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(1) \qquad \rho_{jt} = \begin{cases} 1, & \text{if } \rho^{*}_{jt} > 0, \\ \\ 0, & \text{otherwise.} \end{cases}
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(2) \qquad \rho^{*}_{jt} = \alpha\omega_{jt} + \varepsilon_{jt}.
$$

Variable ρ_{jt} is a dummy variable that takes a value of one if country j in period t experienced a sudden stop (current account reversal), and zero if the country did not experience a sudden stop (current account reversal). According to equation (2), whether the country experiences a sudden stop (current account reversal) is assumed to be the result of an unobserved latent variable ρ^{*}_{jt}. ρ^{*}_{jt}, in turn, is assumed to depend linearly on vector ω_{tj}. The error term ε_{tj} is given by given by a variance component model: $\varepsilon_{jt} = \nu_{j} + \mu_{jt}$. ν_{j} is iid with zero mean and variance σ^{2}_{ν}; μ_{jt} is normally distributed with zero mean and variance $\sigma^{2}_{\mu} = 1$. One of the ω_{jt} in equation (2) is a dummy variable that takes the value of one if during that year the country in question belonged to a currency union; that is if it was dollarized or if it was a member of an independent currency union. The data set used covers 187 countries, for the 1970-2001 period. Not every country has data for every year, however; the panel is unbalanced. See the Data Appendix for exact data definition and data sources.

In determining the specification of this probit model I followed the literature on external crises, and I included the following covariates:[16] (a) The ratio of the current account deficit to GDP lagged one period. (b) An index that measures the relative occurrence of sudden stops in the country's region (excluding the country itself) during that particular year. This variable captures the effect of "regional contagion," and I expect its coefficient to be positive. (c) The one-year lagged rate of growth of domestic credit. (d) The lagged ratio of the country's fiscal deficit relative to GDP. (e) The country's initial GDP per capita (in logs). (f) A dummy variable that takes the value of one if the country in question belongs to a currency union. This dummy is called *CU*. The coefficient of this variable is of particular interest in this analysis, since it captures the effect of currency unions on the probability of a country experiencing a reversal or a sudden stop. As is discussed below, in some of the regressions I interact the dummy variable CU with other regressors. And finally, (g) in the current account reversal equations I also included (b) A sudden stop dummy that takes the value of one if the country in question experienced a sudden stop in the previous year.

III.3 Basic Results

The results obtained from the estimation of this variance-component probit model for a sample of large countries are presented in Table 6. Columns A through C refer to the probability of a current account reversal; columns D through F are for a sudden stop of capital inflows.

I first discuss the results for *current account reversals* in columns A-C. As may be seen, the vast majority of coefficients have the expected sign, and many of them are significant at conventional levels. The results may be summarized as follows: Larger (lagged) current account deficits increase the probability of a reversal, as does a (lagged) sudden stop of capital inflows. The results also support for the contagion hypothesis: the variable that measures the incidence of sudden stops in the county's region is significantly positive in all of the equations. There is also evidence that a faster rate of growth of domestic credit increases the probability of reversals. Countries with higher GDP per capita have a lower probability of a reversal (coefficient marginally significant in some regressions). Form the perspective of this paper, the most important result is that

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[16] See, for example, Frankel and Rose (1996), Milesi-Ferreti and Razin (2000) and Edwards (2002).

the coefficient of the currency union dummy is *not* significant in any of the regressions. In order to investigate whether CU affected the probability of a crisis in an indirect way, I interacted CU with other regressors. The results (not reported due to space considerations) indicate that the coefficients were not significant.

The results from the random effect probit estimates for *sudden stops* are reported in the last three columns in Table 6. Broadly speaking these results support those obtained for reversals. The currency union indicator is never significant (although now some of the point estimates are positive). An increase in the (lagged) current account deficit increases the probability of a sudden stop, as does a higher incidence of sudden stops in the region. A somewhat surprising result is that according to these results, with other things given, a higher "initial" level of GDP per capita increases the probability of a sudden stop.

To summarize, the results obtained from the random effect probit panel regressions indicate that currency union countries have not faced a lower probability than countries that have a national currency, of facing either sudden stops or current account reversals. The next question, and one addressed in the Section that follows, is whether currency union countries are affected by external shocks – including reversals and sudden stops – in the same way than countries with a national currency.

IV. Monetary Unions and Economic Performance: An Empirical Analysis from a Latin American Perspective

In this section I investigate whether belonging to a monetary union affects the way in which external shocks affect a county's rate of economic growth. As pointed out in Section II of this paper, one of the costs of monetary unions is that countries give up independent monetary policy. This means that exchange rate adjustments cannot be used as a way of absorbing external shocks, including terms of trade shocks, current account reversals and sudden stops. How large these costs actually are, is an empirical issue. In principle, if the countries belonging to a currency union have wages and prices flexibly – one of the OCA criteria – this cost should be rather low. In this case external shocks can be accommodated through changes in domestic relative prices.

The question of how to accommodate international terms of trade shocks is particularly important for the Latin American nations. Traditionally, the countries in the region have been subject to substantial volatility in terms of trade shocks. For the period 1970-2000, for example, the standard deviation of rate of change of the terms of trade was 16.9%. For the same period terms of trade volatility for the industrial countries was only 6.5%; in Asia terms of trade volatility was 14.5%, also lower than in Latin America.

IV.1 An Empirical Model

The point of departure of the econometric analysis is a two-equation formulation for the *dynamics* of real GDP per capita growth of country j in period t. Equation (3) is the long run GDP growth equation; equation (4), on the other hand, captures the growth dynamics process.

(3) $$\tilde{g}_j = \alpha + x_j \beta + r_j \theta + \omega_j .$$

(4) $$\Delta g_{jt} = \lambda [\tilde{g}_j - g_{jt-1}] + \varphi v_{jt} + \gamma u_{jt} + \varepsilon_{jt} .$$

$\tilde{g}_j$ is the long run rate of real per capita GDP growth in country j; x_j is a vector of structural, institutional and policy variables that determine long run growth; r_j is a vector of regional dummies; α, β and θ are parameters, and ω_j is an error term assumed to be heteroskedastic. In equation (4), g_{jt} is the rate of growth of per capita GDP in country j in period t. The terms v_{jt} and u_{jt} are shocks, assumed to have zero mean, finite variance and to be uncorrelated among them. More specifically, v_{jt} is assumed to be an *external terms of trade* shock, while u_{jt} captures other shocks, including *current account reversals* or *sudden stops*. ε_{jt} is an error term, which is assumed to have a variance component form, and λ, φ, and γ are parameters that determine the particular characteristics of the growth process. Equation (4) has the form of an equilibrium correction model and states that the actual rate of growth in period t will deviate from the long run rate of growth due

to the existence of three types of shocks: v_{jt}, u_{jt} and ξ_{jt}. Over time, however, the actual rate of growth will tend to converge towards it long run value, with the rate of convergence given by λ. Parameter φ, in equation (4), is expected to be positive, indicating that an improvement in the terms of trade will result in a (temporary) acceleration in the rate of growth, and that negative terms of trade shock are expected to have a negative effect on g_{jt}.[17] If, as previous work has found, current account reversals and/or sudden stops have a negative effect on growth, we would expect the coefficient γ to be significantly negative.

In terms of the subject of this paper, the main interest is whether the coefficients of the external shocks v_{jt} and u_{jt} are different for currency union countries and countries with a currency of their own. If giving up monetary independence because of membership in a currency union is costly, we would expect φ to be larger for currency union countries, and γ to be more negative in currency union countries than in countries with a currency of their own. That is, in the absence of monetary independence and exchange rate flexibility, external shocks would be amplified. If, on the contrary, the loss of monetary independence is not costly these coefficients would be the same – or very similar – across the two groups of countries.

Equations (3) - (4) were estimated using a two-step procedure. In the first step I estimate the long run growth equation (3) using a cross-country data set. These data are averages for 1970-2001, and the estimation makes a correction for heteroskedasticity. These first stage estimates are then used to generate long-run predicted growth rates to replace $\tilde{g}_j$ in the equilibrium error correction model (4). In the second step, I estimated equation (4) using GLS for unbalanced panels; I used both random effects and fixed effects estimation procedures.[18] The data set used covers 157 countries, for the 1970-2001 period; not every country has data for every year, however. See the Data Appendix for exact data definition and data sources. In Sub-Section IV.3 I present some extensions.

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[17]   See Edwards and Levy Yeyati (2005) for details.
[18] Due to space considerations, only the random effect results are reported.

IV.2 Basic Results

In estimating equation (3) for long-run per capita growth, I followed the standard literature on growth, as summarized by Barro and Sala-I-Martin (1995), Sachs and Warner (1995) and Dollar (1992) among others. I assume that the rate of growth of GDP ($\tilde{g}_j$) depends on a number of structural, policy and social variables. More specifically, I include the following covariates: the log of initial GDP per capita; the investment ratio; the coverage of secondary education, as a proxy for human capital; an index of the degree of openness of the economy; the ratio of government consumption relative to GDP; and regional dummies. The results obtained from these first-step estimates are not reported due to space considerations.

In Table 7 I present the results from the second step estimation of the growth dynamics equation (4), when random effects were used. The Table has six columns: the first two contain the results for all countries with a national currency (independently of their exchange rate regime). The next two columns contain the results for countries with a currency of their own *and* flexible exchange rate regimes. Finally, the last two columns contain the results for currency union countries.[19]

As may be seen, the results are quite interesting. The estimated coefficient of the growth gap is, as expected, positive, significant, and smaller than one. The point estimates are on the high side -- between 0.79 and 0.92 --, suggesting that, on average, deviations between long run and actual growth get eliminated rather quickly. Also, as expected, the estimated coefficients of the terms of trade shock are always positive, and statistically significant, indicating that an improvement (deterioration) in the terms of trade results in an acceleration (de-acceleration) in the rate of growth of real per capita GDP in our three samples. As may be seen, the coefficients of the current account reversals and the sudden stops variables are *significantly negative*, in the regressions for the complete sample (Columns A and B) and in those for the currency union countries (Columns E and F), indicating that these shocks have been associated with a deceleration of growth. Interestingly, these coefficients are *not* significant for the flexible exchange rate countries, suggesting that this group has been able to accommodate these external shocks without experiencing a decline in GDP growth. From the perspective of this

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[19] I used the Levy-Yeyati and Stuzenegger (2003b) de facto exchange rate regimes classification.

paper, what is particularly important is that the point estimates of the shock-related coefficients are larger for the currency union countries than for the two samples of nations with a currency of their own. Consider, for example, the specification in columns A, C and E. The point estimates of the terms of trade shock are 0.071 for all countries with a national currency, 0.034 for the flexible exchange rate countries, and 0.099 for the currency union countries. χ^2 tests indicate that these coefficients are *statistically different* across equations; the values of these t-tests are 7.8 for the comparison of currency union and flexible countries, and 3.8 for the comparison between currency union and all countries. For the specifications in columns A, C and E the point estimates of the current account reversal variable are also larger in absolute terms for the currency union countries (-2.30), than for the flexible rates countries (-0.47 and non significant), and the all countries with a currency group (-0.74). χ^2 tests also indicate that these coefficients are *statistically different* across equations (9.2 and 5.1, respectively). Finally, these results also indicate that the effects of sudden stops on growth have been significantly more negative in currency union countries than in countries with a currency of their own. Notice, in particular, that the coefficient of sudden stops variable is positive and non significant for the flexible exchange rate countries (Column D).

Overall, then, the results reported in Table 7 indicate that countries that belong to a currency union had suffered a greater impact from external shocks than countries with a national currency. The difference in the effects of external shocks is particularly large when the currency union countries are compared with nations that have had flexible exchange rates. This result is particularly important, since it is precisely under flexible exchange rates that countries are able to exercise fully an independent monetary policy.

IV.3 *Instrumental Variables Estimates and Other Extensions*

Instrumental Variables: Some of the results presented above *may* be subject to endogeneity problems. This is particularly the case of the specification that includes the current account reversals as a regressor. In this section I present results obtained when instrumental variables random effect regressions for unbalanced panels were estimated. The results obtained are presented in Table 8, for the same three samples: (a) all countries with a national currency; (b) flexible exchange rate nations; and (c) currency union countries. In deciding which instruments to use, I took into account the results in

the preceding section on the probability of a country experiencing a reversal. The following instruments were included: lagged changes in the international terms of trade, lagged current account balance, lagged indicator for occurrence of sudden stop during the previous year, a lagged index of occurrence of sudden stops in the country's region (neighborhood), lagged international reserves over GDP ratio, lagged rate of growth of domestic credit. As may be seen from Table 8, the results confirm the findings reported in Table 7. The estimated coefficients for both external shocks variables – changes in international terms of trade and current account reversals – are significantly larger for the currency union countries than for the two samples of countries with a national currency.

Asymmetric Terms of Trade Shocks: The results discussed above were obtained under the assumption that positive and negative terms of trade shock have a symmetric effect on the dynamics of growth. This needs not be the case, however.[20] In order to investigate this issue re-estimated equation (4) replacing the terms of trade term by two regressors: positive terms of trade shock, and negative terms of trade shock. The results obtained indicate that the effects of terms of trade shocks are asymmetric, with negative terms of trade shocks having a larger (negative) effect on growth than positive terms of trade shocks. The results obtained for the specification with the reversals shock are presented in Table 9. The difference in the point estimate for the positive and negative terms of trade shock are particularly large for the currency union countries. χ^2 tests indicate that these coefficients are *statistically different* across equations. Overall, these estimates, once again, confirm our previous findings, in the sense that external shocks have a larger effect on growth in currency union countries than in countries with a currency of their own.

V. Concluding Remarks

In this paper I analyzed a number of issues related to monetary unions, from a Latin American perspective. In doing this I have taken a different perspective from that of most works on the subject. Instead of analyzing whether the Latin American countries satisfy the traditional OCA criteria, such as facing similar external shocks across countries, I analyze the empirical evidence on the economic performance of currency

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[20] See Edwards and Levy-Yeyati (2005) for a discussion of this issue.

union countries, and I interpret these results from the perspective of the Latin American nations. The empirical analysis was divided in two parts. First, I investigated whether belonging to a currency union reduces the probability of a country being subject to: (a) "sudden stop" of capital inflows; and/or (b) "current account reversals." Both of these are important questions, since the Latin American nations have traditionally been subject to significant fluctuations in capital flows, and have experienced a large number of current account crises (Edwards, 2004). The results are robust and indicate that currency union countries have not faced a lower probability of facing a current account reversal or a sudden stop, than countries with a currency of their own.

In Section IV I analyze the ability of monetary union countries to accommodate three types of external shocks: (a) terms of trade shocks; (b) sudden stops of capital inflows; and (c) current account reversals. The question is whether, as opponents of monetary unions have argued, countries without a currency of their own incur in larger costs as a result of external shocks. Again, this is a highly relevant issue for the Latin American nations, since they have historically had highly volatile terms of trade, and have been subject to wide variations in external conditions (Edwards and Levy-Yeyati, 2005). In performing this analysis I use a new and large cross-country data set, and I control for the role of other relevant variables. The results obtained indicate that countries that belong to a currency union had suffered a greater impact from external shocks than countries with a national currency. The difference in the effects of external shocks is particularly large when the currency union countries are compared with nations that have had flexible exchange rates. This result is particularly important, since it is precisely under flexible exchange rates that countries are able to exercise fully an independent monetary policy.

A word of caution in interpreting these results: many of the currency union countries are small nations and/or territories. Countries with a currency of their own, on the other hand, tend to come in all sizes. It is possible, then, that the econometric results reported here are affected by this fact. One possible way of dealing with this potential problem is by following Edwards and Magendzo (2002) work on dollarized nations. In that paper propensity scores are used to define an appropriate control group; in a second stage matching coefficients are used to analyze the effects of dollarization.

The results reported in this paper provide useful evidence for evaluating the costs and benefits of countries joining monetary unions. It is important to notice, however, that they do not provide a complete analysis of such a decision. A definitive analysis would require considering other sources of costs and benefits, including gains in credibility and increase trade among union members.

Table 1
Currency Unions

AUSTRALIA
Christmas Island (dependency)
Cocos (Keeling) Island (dependency)
Norfolk Island (dependency)
Kiribati
Nauru
Tuvalu

DENMARK
Faroe Islands (dependency)
Greenland (dependency)

ECCA
Anguilla (dependency of UK)
Antigua and Barbuda
Dominica
Grenada
Montserrat (dependency of UK)
Saint Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines

FRANCE
French Guiana (dependency)
French Polynesia (dependency)
Guadeloupe (dependency)
Martinique (dependency)
New Caledonia (dependency)
Reunion (dependency)
Saint Pierre and Miquelon (dependency)
Wallis and Futuna (dependency)
Andorra

SPAIN
Andorra

BELGIUM
Luxembourg

CFA
Benin
Burkina Fasso
Cameroon
Central African Republic
Chad
Congo, Republic of the
Cote d'Ivoire
Equatorial Guinea
Gabon
Guinea-Bissau
Mali
Niger
Senegal
Togo

CHINA
Macau (dependency)

MOROCCO
Western Sahara

NETHERLANDS
Netherlands Antilles (dependency)
Aruba (dependency)

NEW ZEALAND
Niue (dependency)
Tokelau (dependency)
Pitcairn Island (dependency of UK)

SINGAPORE
Brunei

SOUTH AFRICA
Lesotho
Namibia

UNITED KINGDOM
Falkland Islands (Islas Malvinas) (dependency)
Gibraltar (dependency)
Saint Helena (dependency)
British Indian Ocean Territory (dependency)

USA
Northern Mariana Islands (dependency)
Bermuda (dependency of UK)
British Virgin Islands (dependency of UK)
Cayman Islands (dependency of UK)
Turks and Caicos Islands (dependency of UK)
Bahamas, The
Barbados
Belize
Ecuador (since 2000)
Guatemala
Liberia
Marshall Islands
Micronesia, Federated States of
Palau
Panama

Source: Refers to the year 1996. Cabasson (2003)

Table 2
Incidence of Sudden Stops: 1970-2001

Region	No sudden stop	Sudden stop
Industrial countries	96.3	3.7
Latin American and Caribbean	92.2	7.8
Asia	94.9	5.1
Africa	93.4	6.6
Middle East	88.7	11.3
Eastern Europe	93.7	6.4
Total	*93.6*	*6.4*
Observations	2,943	
Pearson		
Uncorrected chi2 (5)	18.84	
Design-based F(5, 14710)	3.76	
P-value	0.002	

Table 3
Incidence of Current Account Reversals: 1972-2001

Region	No Reversal	Reversal
Industrial countries	97.6	2.4
Latin American and Caribbean	84.0	16.0
Asia	87.9	12.1
Africa	83.4	16.1
Middle East	84.0	16.0
Eastern Europe	85.0	15.0
Total	*87.2*	*12.8*
Observations	2,975	
Pearson		
Uncorrected chi2 (5)	77.88	
Design-based F(5, 14870)	15.57	
P-value	0.000	

Table 4

Incidence of Current Account Reversals for Currency Unions Countries and

Countries with a Currency of their Own

	No Reversal	*Reversal*	*Total*
No Currency Union	2,400	264	2,664
	90.09	9.91	100
	86.49	80.49	85.85
Currency Union	375	64	439
	85.42	14.58	100
	13.51	19.51	14.15
Total	2,775	328	3,103
	89.43	10.57	100
	100	100	100
*Pearso*n chi^2(1) =	8.6902	--	--
P-value	0.003	--	--

Table 5

Incidence of Sudden Stops for Currency Unions Countries and Countries with a

Currency of their Own

	No Sudden Stop	*Sudden Stop*	*Total*
No Currency Union	2,337	158	2,495
	93.67	6.33	100
	88.99	78.61	88.26
Currency Union	289	43	332
	87.05	12.95	100
	11.01	21.39	11.74
Total	2,626	201	2,827
	92.89	7.11	100
	100	100	100
*Pearso*n chi^2(1) =	19.4378	--	--
P-value	0.000	--	--

Table 6

Determinants of Current Account Reversals and Sudden Stops

Random Effects Probit Regressions

Variable	Current Account Reversals			Sudden Stops		
	(A)	*(B)*	*(C)*	*(D)*	*(E)*	*(F)*
Current-Account deficit to GDP	0.10	0.09	--	0.07	0.07	--
	(10.21)***	(11.99)***	--	(7.16)***	(9.04)***	--
Sudden stop	0.39	0.39	--	--	--	--
	(2.04)**	(2.48)**	--	--	--	--
Sudden stops in region	2.06	2.25	--	3.96	4.47	--
	(4.16)***	(5.25)***	--	(6.71)***	(8.37)***	--
Domestic credit growth	0.0002	0.0002	--	-0.0005	-0.0000	--
	(1.78)*	(1.75)*	--	(1.11)	(0.45)	--
Fiscal deficit to GDP	-0.002	--	--	-0.01	--	--
	(0.22)	--	--	(0.85)	--	--
Initial GDP per capita	-0.08	-0.04	--	0.23	0.25	--
	(1.67)*	(0.86)	--	(3.82)***	(4.22)***	--
CU	--	-0.02	0.17	--	0.20	0.26
	--	(0.14)	(1.26)	--	(0.83)	(1.27)
Observations	1515	1886	2653	1515	1954	2238
Countries	95	118	143	95	119	127

Absolute value of z statistics is reported in parentheses; All regressors are one-period lagged; constant term is included, but not reported. *** significant at 1%; ** significant at 5%; * significant at 10%;

Table 7

Current Account Reversals, Sudden Stops and Growth

Random Effects GLS Regressions

Variable	Countries with national currency		Countries with national currency and flexible exchange rate		Countries with currency union	
	(A)	(B)	(C)	(D)	(E)	(F)
Growth gap	0.79	0.80	0.87	0.84	0.84	0.92
	(38.18)***	(39.37)***	(20.97)***	(21.61)***	(12.58)***	(11.09)***
Change in terms of trade	0.07	0.07	0.03	0.06	0.10	0.09
	(11.22)***	(11.08)***	(2.69)***	(4.50)***	(4.59)***	(4.25)***
Current account reversal	-0.74	--	-0.47	--	-2.30	--
	(4.16)***	--	(0.63)	--	(1.98)**	--
Sudden stop	--	-0.28	--	0.21	--	-1.79*
	--	(2.74)***	--	(0.25)	--	(1.62)
Observations	1642	1616	412	431	192	130
Countries	84	78	64	63	10	7

Absolute value of z statistics is reported in parentheses; constant term is included, but not reported.
*** significant at 1%; ** significant at 5%; * significant at 10%;

Table 8

Current Account Reversals, Sudden Stops and Growth

IV Regressions

Variable	Countries with national currency	Countries with national currency and flexible exchange rate	Countries with currency union
Growth gap	0.78	0.78	0.94
	(31.67)***	(16.33)***	(9.42)***
Change in terms of trade	0.06	0.06	0.12
	(8.22)***	(3.67)***	(3.70)***
Current account reversal	-3.27	-5.11	-9.48*
	(2.42)**	(1.27)	(1.62)
Observations	1336	382	121
Countries	73	60	7

Absolute value of z statistics is reported in parentheses; constant term is included, but not reported. *** significant at 1%; ** significant at 5%; * significant at 10%;

Table 9

Asymmetric Terms of Trade Shocks and Growth

Random Effects GLS Regressions

Variable	Countries with national currency	Countries with national currency and flexible exchange rate	Countries with currency union
Growth gap	0.79	0.87	0.84
	(38.18)***	(20.92)***	(12.56)***
Current account reversal	-0.69	-0.55	-2.11
	(1.95)*	(0.72)	(1.80)*
Positive change in terms of trade	0.06	0.04	0.07
	(5.80)***	(2.35)***	(1.89)*
Negative change in terms of trade	0.09	0.02	0.13
	(7.77)***	(0.51)	(3.31)***
Observations	1642	412	192
Countries	84	64	10

Absolute value of z statistics is reported in parentheses; constant term is included, but not reported. *** significant at 1%; ** significant at 5%; * significant at 10%;

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Appendix
Description and Source of the Data

Variable	Definition	Source
Current-Account Reversal	Reduction in the current account deficit of at least 4% of GDP in one year. Initial balance has to be a deficit	Author's elaboration based on data of current account deficit (World Development Indicators)
Sudden Stop	Reduction of net capital inflows of at least 5% of GDP in one year. The country in question must have received an inflow of capital larger to its region's third quartile during the previous two years prior to the "sudden stop."	Author's elaboration based on data of financial account (World Development Indicators)
Domestic credit growth	Annual growth rate of domestic credit	World Development Indicators
Fiscal deficit to GDP	Overall budget to GDP	World Development Indicators
GDP per capita	GDP per capita in 1995 US$ dollars	World Development Indicators
CU: Currency Union	Dummy variable that takes the value of one if the country in question belongs to a currency union	Author's elaboration based on Cabassos (2003)
Growth Gap	Deviation from long-run economic growth rate	Edwards and Levi-Yeyati (2005)
Terms of trade	Change in terms of trade-exports as capacity to import (constant LCU)	World Development Indicators

Discussion

Enrique Alberola
Bank of Spain

The paper by Sebastian Edwards addresses the issue of the desirability of a Currency Union (CU) from a quite novel perspective which reflects the economic concerns of Latin American economists and policymakers.

The approach considers the attractive of CUs in terms of reducing or solving a secular problem of the economy, which is perceived to be difficult to overcome by internal means. Indeed, this is very much the sort of argument that some European economies, in particular the so-called periphery economies emphasised when they assessed the benefits of EMU. In that case, the perceived benefit was monetary stability thanks to the merger of their weak currencies with traditionally low inflation countries. Note that this very same point could have been made by Edwards, since Latin America has suffered until recently from large price instability. The recent progress in inflation control, under internal anchors –inflation targeting monetary regimes plus flexible, albeit rather managed, exchange rate regimes allows him to focus on a different and equally relevant problem: external financing stability.

More precisely, the papers explores two questions: i) the differential probability of current account reversals or sudden stops occurrence and ii) the differential impact of external shocks on activity under a CU. A conventional answer –particularly from an European perspective- to both questions would be: i) in a CU current account reversals are not an issue and ii) the impact of external shocks is higher. The results found by Edwards are, respectively, the probability is not lower and the impact of external shocks is larger.

The divergence of the first result merits an explanation which I will develop in the comments below, but in any case, the actual achievement of the paper is, in my view, that it puts the finger on a largely dismissed issue in the literatures on Currency Unions MU (EMU) discussions, which it can be considered nonetheless relevant and increasingly so;

namely, the Current account 'sustainability' in EMU. In my comments I will also reflect on this issue and on the conclusions which can be drawn at the light of the results both por Latin America and Europe

1. Scope for reversals in EMU and the experience so far

In no country the current account or external imbalances within the regions are hardly an issue which merits attention and in many of them the regional accounts do not even compute them. Why?. First, because there is the understanding that the regions within a country (with a common currency) share a pool of capital and, therefore, there are no problems to finance the eventual deficits. Second, because even if, by any chance there were some perception of financial problems in a region, the practical consequences of this would be minor. In the case of EMU as in any country, the sustained accumulation of external imbalances will imply a continued deterioration of the Net International Investment Position (NIIP), so that an increasingly higher amount of domestic resources will be devoted to pay for the returns on the net liabilities. At some point, a large debtor position may make the markets aware-specially if this widening negative NIIP is accompanied by economic weakness- and they might impose some sort of risk premia on the external debt of a country. This is much as it happens with the public debt, and,as a matter of fact, some States of the US have suffered risk premia in their public bonds due to this sort of consideration[1]. But this is nothing in comparison to the related to the dramatic balance of payment cum currency crises that have typically characterised countries separated from the rest by a currency. In other words, there is no scope for dramatic current reversals and exchange rate crises. Thus, the conventional wisdom that currency account imbalances in a CU hardly matter is based on the nimiety of their consequences.

The experience in the EMU seems sobering so far. Countries which in the past suffered from (mild) current account reversals, have within EMU been able to maintain large current account and dynamism in the growth process. The cases of Spain and Greece are illustrated

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[1] Incidentally, this is not the case with public debt in Europe, where risk premia are very small, in spite of the large different on the level of public debt among countries.

in the first two figures. While in the last decade the current account imbalances and exchange appreciations ended up in a drastic economic slowdown, currency devaluations and mild current account reversals, the experience of the last decade –much of it within EMU or in the road towards it- shows that now these disequilibria have had no impact so far. However, this does not mean that these economies and their external imbalances do not matter. They do. In the case of Spain they cannot be explained in terms of productivity convergence, as the Balassa-Samuelson hypothesis would suggest, but they are signalling an acute loss of competitiveness; in the case of Greece, the external imbalance is partially explained by a resilient public sector deficit which has surpassed in the last years the 3% Stability and Growth Pact ceiling. Portugal (last figure) is an even more interesting case. A country that after a successful convergence to EMU has got into serious problems. These problems are reflected in a large current account imbalance, a large public sector deficit and several economic plans both to reduce the fiscal deficit and to revive the economy, which is trapped in a low growth situation. Probably, Portugal would have suffered the rigour of the markets by now and an escudo devaluation to restore relative prices would have been unavoidable. In EMU this is not feasible anymore, but this does not mean that the adjustment process is not painful, it is protracted, long and with no easy way out. Thus, the impossibility of a sudden current account plus currency adjustment seems to be a mixed blessing.

This review of some of the former 'periphery' EMU economies highlights that the fact that the CU conjures up the possibility that the cumulation current account imbalances lead to financial problems and that may translate into a currency crises does not implies that they do not matter. Actually, they may signal deeper problems that, as a matter of fact, are more difficult to overcome within a CU because the eventual adjustment has to fall mostly on the real side.

2. Comments on the results

The approach by Edwards allows to underscore this important insight in existing CUs but he goes much further by showing that in the extant CUs the probability of current account

reversals is not lower, and actually for most of the specifications, the sign relating CUs and the probability of reversals is positive, albeit non-siginificant. This is rather striking given the comments in the previous sections. The evidence is based on a large sample of countries and a quite robust econometric analysis, so why does the probability turns out to be higher?. The reason is the sample used, which covers all the CU existing at 1996. Euro area countries are thus not included. As a result most of the countries are small, underdeveloped economies, whose (in most cases extremely underdeveloped) financial systems are actually far from being integrated with that of the currency anchor country –in most cases, the metropoli or ex-metropoli. This sample bias severely determines the results so their validity for the case of EMU-type monetary Union does not apply.

The second conclusion of the analysis, namely, that the real cost of sudden stops and current account reversals is higher with a CU is reasonable but it also merits some additional comment. The empirical analysis identifies the external shocks but, of course, it does not considers the quantity of potential shocks –mainly in the monetary and financial domain- that a CU shelters from or simply avoids. A CU slashes the ability to generate idiosyncratic monetary shocks since theres no autonomous monetary policy, nor runs on the currency and it also tends to protect from other possible external shocks. Even some internal shocks which might have consequences outside a CU are dismissed by the markets. Examples of the first are the reduced impact that the Latin American crises at the beginning of the decade had on the Spanish markets –in term of risk premia- in spite of the relatively large exposure of the latter economy to Latin America; an example of the second is the negligible consequences of fiscal indiscipline within EMU. Note that in this second case, the sheltering role of a CU is not necessarily benign, in terms of enhancing internal discipline.

3. Conclusions

This paper has the virtue to make the reader reflect both on the consequences and on the premises for a process of monetary unification. These final reflections convey on the one hand the European experience and on the other hand the Latin America prospects.
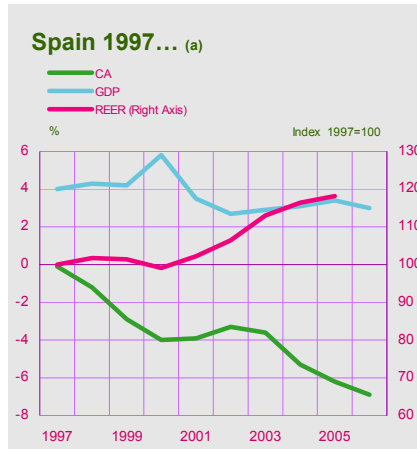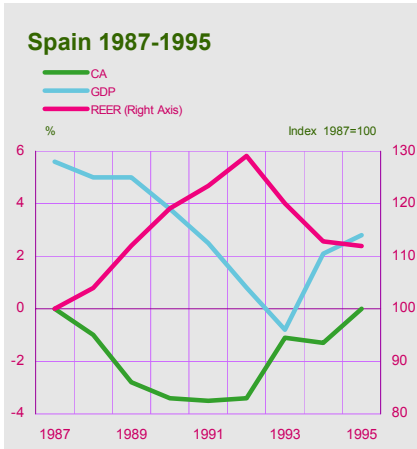
In the case of the European Monetary Union, current account reversals of the type considered by Edwarsds (sudden, large) are unfeasible since the countries within the Union share a highly –albeit not perfectly integrated- financial market. This is not to mean that current account imbalances are non-relevant. On the contrary, in some stances the accumulation of current account imbalances may signal future and mounting problems for the economy. Thus they are a symptom rather than a problem themselves but in any case complacency or disregard should be avoided.

For Latin America, the lessons to draw are inspired both by the approach of the paper and on the different nature of CU in Europe, usually an inspiration for Latin Americans when thinking of integration. The lesson would be that as a precondition for monetary integration a sufficiently deep process of economic integration is relevant. Note that this is not to say that all the preconditions for an optimal currency areas should be met –as a matter of fact, EMU is still far from being a OCA. Furthermore, the sheer operation of a CU may improve the conditions to form it, strengthening the process as it proceeds. In other words, a potentially successful process of monetary integration should strike the right balance between the coronation theory –countries should be ready enough to share their currencies- and endogeneity –countries within a CU develop mechanisms to improve the premises to form one.

Clearly, Latin America is far from fulfilling the loosest of the preconditions, even if quite relevant integration steps were taken in the decade of the nineties. However, these processes, either were not seen as a first step to monetary integration (NAFTA), or –when their ambitious were higher- they have suffered from serious reversals (Mercosur). The European process shows that the process is long, protracted and that it has to show a rather continous progress –ever increasing integration-. This continuity was feed by a series of characteristics that, as far as one can see, do not apply to Latin America: i) the push for integration was sustained and firmly framed in a strong institutional setting; in Latin America the process proceeds in an institutional vacuum and moves forward by arbitrary, spasmodic political impulses, with no uniqe direction; furthermore, it is difficult to
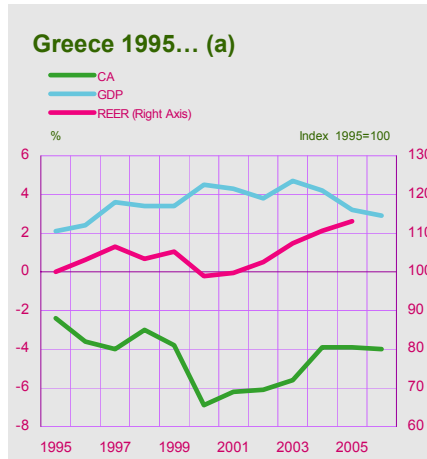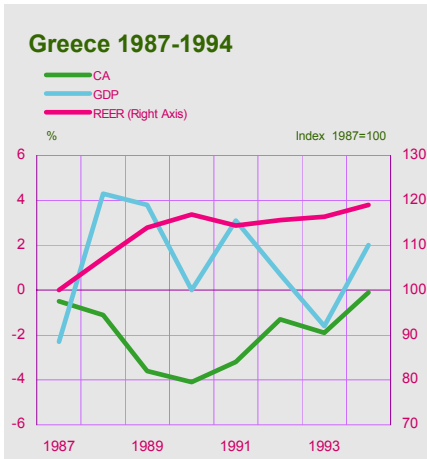
envisage a strong institutional common framework where individual institutional frameworks are weak; ii) the existence of internal anchors of the process allow to see emulation as a driving force, and the relative homogeneity –in terms of size and economic development- of countries has also helped to shape a process of balanced integration; ii) in Latin America, the potential anchor (U.S) is external, too large and disengaged of the process of integration beyond the idea of a pure free trade area; iii) the economic and trade structure –too biased towards commodities in several cases- is also a handicap for the integration of the consumption markets –one of the big driving forces of EU countries; and iv) economic instability has proved a big hindrance to the process.

Looking ahead, there may be then some scope for optimism for Latin America in the medium run. The recent progress in economic stability and the configuration of multiple interregional trade agreements (although the big one, FTAA, seems ever further away) might increase in the medium run the appetite for more economic integration and also the premises to advance in a process of tighter monetary coordination. If this were to happen,our previous reflections suggest that a final irony may arise: In the process of getting ready for a CU,-by achieving a stronger economic and institutional setting-the problems a CU is supposed to mitigate –in this case current account reversals- will be mostly overcome by then.

Spain 1987-1995

- CA
- GDP
- REER (Right Axis)

%　　　　　　　　　　　　　Index 1987=100

FUENTE: IFS, WEO.

a. Beyond 2004, estimated.

Spain 1997… (a)

- CA
- GDP
- REER (Right Axis)

%　　　　　　　　　　　　　Index 1997=100

Greece 1987-1994

- CA
- GDP
- REER (Right Axis)

%　　　　　　　　　　　　　Index 1987=100

FUENTE: IFS, WEO.

a. Beyond 2004, estimated.

Greece 1995… (a)

- CA
- GDP
- REER (Right Axis)

%　　　　　　　　　　　　　Index 1995=100

Portugal 1995… (a)

- CA
- GDP
- REER (Right Axis)

%　　　　　　　　　　　　　Index 1995=100
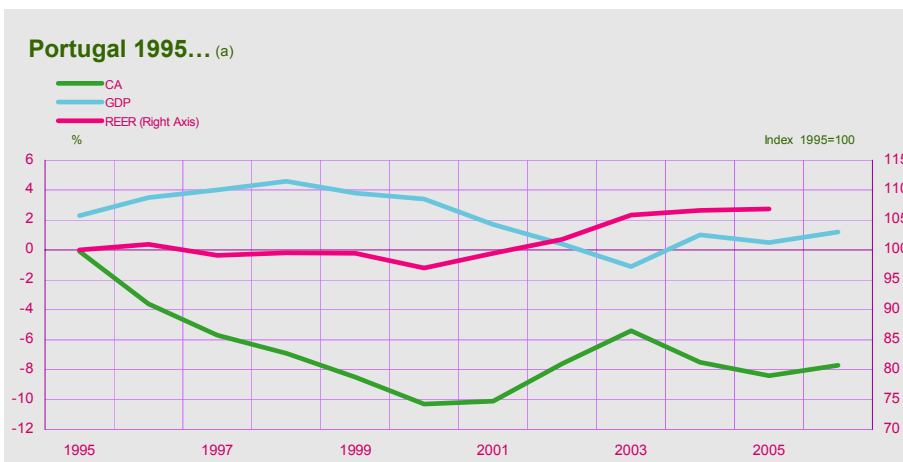
FUENTE: IFS, WEO.

a. Beyond 2004, estimated.

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