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Heading into Trouble: A Comparison of the Latin American Crises and the Euro Area's Current Crisis

Abstract

We compare the experience of Latin American external debt crises, in particular the one in the 80s, with the current European one. We do so with the aim of shedding some light on the needed adjustment mechanisms. We argue for the need of much larger debt relief in Europe. To address the moral hazard problems that would arise, we propose providing such relief conditional on the reduction of both the fiscal and the current account deficits to zero as a commitment signal.

Resumen

Comparamos la experiencia de las crisis de deuda externa de América Latina, en particular la de los años ochenta, con la

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actual crisis europea. Esto lo hacemos con el fin de arrojar algo de luz sobre los mecanismos de ajuste necesarios. Abogamos por la necesidad de un alivio de deuda mucho más grande en Europa. Para afrontar los problemas de riesgo moral que surgirían, proponemos que se proporcione dicho alivio condicionado a que tanto el déficit fiscal como el de cuenta corriente se reduzcan a cero como una señal de compromiso.

1. INTRODUCTION

The euro area's crisis has brought economic hardship, has been a matter of great concern to policy makers, and has captured the attention of many scholars around the world. Unquestionably, finding a feasible solution represents an enormous challenge in many respects. Against this backdrop, the main purpose of this paper is two-fold. First, we analyze the main elements of previous crises in Latin America and, in particular, how policy makers responded at the time. We focus on the crisis during the 1980s, since we want to concentrate on the macroeconomic aspects, as in this instance there was no banking crisis. However, we occasionally refer to other crises in the region.

Second, we compare these elements to those of the current European crisis. This comparison can be useful to identify some patterns that could prove helpful in improving our understanding of the current challenges faced by policy makers in the euro area. Indeed, although every debt crisis might have its own idiosyncrasies, there are some common patterns in all of them (Reinhart and Rogoff, 2009). For instance, a key element common to all of these crises is an excess of expenditures over income. At the end of the day, it is inconsequential where the excess starts, whether the private or the public sector. This is so since public debts eventually fall on households.

In this context, for policy and decision makers alike, it is essential to identify potential signs of trouble. These typically involve an excess of consumption, investment or public expenditures, which in turn lead to an increase in public deficits

and/or current accounts. Other relevant signs are unusually low interest rates or misalignments in real exchange rates. The latter can be captured by unit labor costs. If the resources used for the expenditures are intermediated through the banking sector then a banking problem is likely. If it does take place, it turns into a fiscal problem to the extent government support is provided. Moreover, asset pricing bubbles are detrimental as they distort consumption and investment decisions, yet they can be difficult to identify ex ante.[1]

In general, high levels of debt to GDP ratios are a quandary. Characteristically, addressing debt issues might lead to a reduction in economic activity, increasing the ratio. On the other hand, responding to a decline in economic activity might increase debt levels, augmenting the ratio. All in, by their own, these signs do not necessarily imply an imminent crisis, and having some favorable indicators does not preclude one. It is rather their joint behavior and, in particular, how they evolve through time what might point towards one.

From the economic analysis and policy response point of view, there are two key elements to consider: the shorter-term financing needs, what we call the flows problem, and bringing debts to a sustainable level, the stocks problem. More specifically, on the one hand, if expenditures are greater than the available income –including financing resources–, then an irremediably adjustment takes place, a flows problem. Typically, the adjustment falls on consumption and investment, comprising public accounts, which will in turn affect the private sector. These adjustments are usually draconian, involving significant expenditure reductions.

For instance, in the 1980s, Latin American countries had to adjust their economies to a sudden stop in foreign financing, a flows problem. Under these circumstances, among many others, they implemented adjustment plans entailing expenditure reducing policies –such as fiscal restraint–, and

[1] The term assets is being used in a wide sense, including financial, real state, capital assets, among others.

expenditure switching measures –such as nominal devaluations. These measures were generally implemented through IMF stand-by programs.

On the other hand, since in these crises past unbalances also have to be dealt with, financing them is testing, a stocks problem. Indeed, a sudden stop not only refers to the unavailability of new net market financing, but also to refinancing.

Adjustment programs must be accompanied by a set of comprehensive structural reforms to increase productivity and, fundamentally and permanently, enhance competitiveness. Given the usual size of the macroeconomic adjustment, efforts to implement these programs and economic reforms must be complemented by the international community's financial support, commonly in some form of debt relief. In effect, an adjustment program to address a stocks problem implemented solely by a country is typically unfeasible, thus, the presence of backstops is essential.

In the case of Latin America, the adjustment processes led to primary fiscal balance surpluses and a turnaround in external accounts. Although evidently necessary and inevitable, efforts to adjust the domestic absorption proved to be insufficient. Economic activity remained stagnant and foreign debt to GDP ratios kept growing. In this scenario, Latin American countries implemented a number of structural reforms, such as trade liberalization and public revenue boosting privatizations. These also aimed to increase productivity and competitiveness. In addition, they were able to restructure their external debts through the so-called Brady Plan. All in all, in terms of economic policy, Latin American countries took several steps towards eventually finding a feasible solution to their crises.

Latin American countries faced recurrent debt crises during the last two decades of the previous century. Today, as then, many governments in the euro area periphery have substantial debts denominated in a currency they do not mint. In addition, the current sovereign debt crisis in Europe is systemic and poses a threat to the international financial system. Thus, so as to gain a deeper understanding of the European dilemma,

it seems adequate to explore how Latin American countries responded to their crises and how they managed to stabilize their economies.

There are several lessons from the Latin American experience. First, it is crucial to correct the macroeconomic imbalances that caused the crisis. The necessary adjustment can, and probably will, lead to an even deeper economic downturn in the short run. However, the adjustment's costs will tend to be higher if these measures are either postponed or halfheartedly adopted.

Second, rapid and large real exchange rate devaluations are crucial to help buffer the crisis' negative impact on local economic activity and generate the foreign currency necessary for the external debt service. Commonly, real devaluations were implemented by means of nominal devaluations. Thus, an exchange rate policy at the authorities' disposal is crucial to lessen the crisis' impact. Nonetheless, the effectiveness of such devaluations diminishes with each implementation. This is the case as agents adjust their prices each time faster after a devaluation.

Third, measures adopted to solve a debt crisis must be implemented in a credible way, which implies a timely and decisive policy response. Adjustment plans, economic reforms, and renegotiation processes must be credible in order to effectively contribute to a feasible exit from a crisis.

Fourth, given the economic adjustment to bring the debt to sustainable levels, a central issue is how the burden will be shared. In fact, who shares the burden depends, to a great extent, on the institutional arrangements put in place before a crisis, the nature of the adjustment process, and the policy response during the crisis. One related issue is how prolonged and deep the adjustment will be. In this respect, Latin American countries had a head start regarding their competitive position, as they implemented real devaluations.

Fifth, it was not until structural reforms were introduced and foreign debts renegotiated that Latin America obtained concrete results in terms of economic stability and growth

potential. In effect, after the macroeconomic adjustment policies, economic activity remained stagnant, and foreign debt to GDP ratios kept growing. Hence, Latin American countries had to implement a number of structural reforms and had to renegotiate their foreign debts.

In many aspects, the current situation in the euro area is harsher than that of Latin American countries during their debt crisis period. First, fiscal and current account deficits –as a proportion of their GDP– in the peripheral European countries are greater than, for example, those of Latin American countries in the eighties.

Second, euro area countries have a limited number of policy instruments at their disposal, precisely because they belong to a monetary union. In particular, as is obvious, euro area members do not have the benefits of an individual exchange rate policy. Therefore, the immediate adjustment must disproportionally rely on expenditure reducing policies.

Third, the magnitude of the fiscal and financial problems in Europe, along with a reduced number of policy tools and adjustment mechanisms, makes it less likely for authorities' actions to be perceived as credible. In effect, credibility is a key issue when it comes to the implementation of economic adjustment programs.

In addition, in the euro area there is a negative feedback loop between sovereign debt and the banking sector problems. While this was not present in Latin America during the 1980s, in some cases it did take place during the 1990s. As is well known, in such a loop, under a negative economic scenario, if the expectation exists that the banking sector could eventually be in need of financial assistance, the government could be then facing an even higher debt burden, which will reduce its degrees of freedom to act upon any further contingency. Accordingly, this worsens the banks' positions. Although the banking issue is important in its own right, we will focus on the macroeconomic aspects of the crises, as mentioned.

Fourth, the adjustment cost will have to eventually fall on some groups. Although the adjustment's burden should ideally

be equally shared, this will not be the case given the set of mechanisms and institutional arrangements in place. Therefore, the bottom-line is which groups are going to endure which burden. Within a country, this is usually an involved issue as, understandably so, no one wants to take the loss. Within a group of sovereign countries, we might as well consider it a Gordian knot.

Fifth, the correction of macroeconomic imbalances is extremely costly in terms of economic activity and lower standards of living and, therefore, may not be even politically feasible. This has brought to the fore the discussion of the trade-off between balancing the need to adjust and the need to grow. This makes the adoption of structural reforms and the need of debt relief indispensable. What is more, we advocate for fiscal and current account deficits reductions to zero, as a commitment signal to alleviate the moral hazard issue that would arise.

The rest of the paper is divided into three sections and an appendix. Section 2 analyzes the main elements of the Latin American debt crises, focusing on the one during the 1980s. It includes a brief description of its origins and then analyzes the adjustment processes and policy responses. Centrally, we discuss how the crisis came to an end. In particular, we review the structural reforms adopted by Latin American countries and their external debt renegotiation processes.

Section 3 examines key components of the current sovereign debt crisis in the euro area. Then, it goes on to compare the imbalances' magnitude in Europe today with those in Latin America during the 1980s. Furthermore, it discusses the implications of being part of a monetary union. This is in contrast to the Latin American crisis, where in each case, for example, the real exchange rate was a crucial buffer. More generally, being part of a monetary union significantly reduces the number of available adjustment mechanisms. Additionally, these mechanisms act as a risk-sharing device which allows distributing the adjustment burden.

Finally, Section 4 offers some concluding remarks. Complementarily, we present a sovereign default model for a small open economy in the appendix. This model illustrates the main

macroeconomic variables' dynamics during the imbalances' buildup and the adjustment period. Most importantly, it shows that given the size of the needed adjustments, under certain circumstances it will be optimal for governments of affected countries to default. Unfortunately, in the present situation, this does not bode well for the EMU. It also aids in formalizing some of the ideas presented throughout the paper.

2. THE LATIN AMERICAN DEBT CRISES

During the second half of the 1970s and the early 1980s, Latin American countries borrowed extensively from abroad. From 1975 to 1982 the long-term foreign debt for these countries increased from 20% to 35% of their GDP (from 68 to 238 billion dollars). Actually, in 1982, the total external debt of the Latin American region, including short-term debt and IMF credit stood at 49% of their GDP (332 billion dollars). This surge in foreign obligations was possible due to loanable funds made available by advanced economies' commercial banks.

The origin of the substantial increase in foreign borrowing directly contributed to the macroeconomic imbalances' buildup in Latin America. Simply put, they reflected an excess of domestic absorption over income and, thus, led to an increase in current account deficits. In most cases, expansionary fiscal policies were the main reason behind the growing imbalances, as in Argentina, Brazil, and Mexico.[2] However, in other cases, as in Chile, most of the imbalances could be attributed to the private sector, with fiscal policy directly playing only a marginal

[2] In Mexico, the expansionary macroeconomic policies implemented in the 1970s and early 1980s led to a substantial increase in the size of the public sector, and significantly deteriorated the fiscal accounts. The discovery of important oil reserves in the mid 1970s caused a wave of optimism about the prospects of the Mexican economy, which lead to an increase in expenditure and foreign borrowing. In sum, in the case of Mexico, expansionary policies were behind the development of the macroeconomic imbalances (Cárdenas, 1996; Lustig, 1998).

role.[3] What is more, the nominal exchange rate was held fixed despite the increase in domestic prices associated to the imbalance between aggregate demand and output. This situation led to their real exchange rates' overvaluation, which further contributed to the deterioration of the imbalances (e. g., see Sachs, 1989; Dornbusch, 1984; and Edwards, 1989).

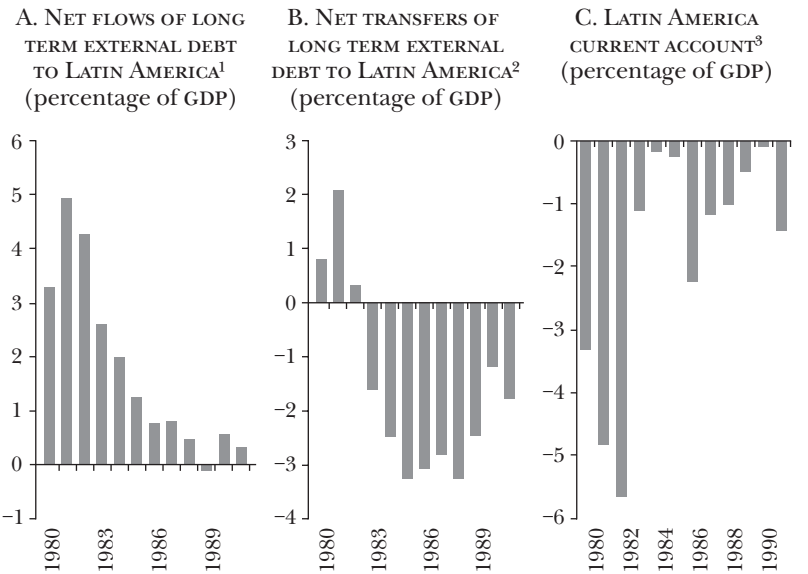
Regardless of the specific economic forces behind, these countries were accumulating foreign debt at a breakneck pace. Plainly, the dramatic rise in debt was not sustainable in the medium or long terms. Under these circumstances, a number of external shocks in the early 1980s set off the debt crisis in the region. More concretely, three shocks played a key role in triggering the crisis: a rise in international interest rates, a recessionary environment in advanced economies, and a fall in commodity prices. Of course, although the debt crisis went off with these shocks, the crises' underlying causes were already set in place way before, in particular the macroeconomic mismanagement in Latin American countries (e. g., see Dornbusch, 1984; Wiesner, 1985; Edwards and Larraín, 1989 and 1991). In effect, by the time the crises erupted, these economies were already in a highly vulnerable position.

By late 1982, virtually all of the countries in the region had experienced a reversal of external credit. To illustrate its magnitude, Figure 1 presents data on the net flows and transfers of long term foreign debt to the region, as well as their current accounts, during the 1980s. The net flows of external debt, which correspond to new loan disbursements minus loan amortizations, reached a peak at 4.9% of its GDP (38 billion dollars) in 1981, and later declined during the 1980s. In fact, precisely after 1982, Latin American countries were only able to obtain

[3] In Chile fiscal policy practically played no role in the built up of the imbalances; most of the vast rise in Chile's external debt was contracted by private agents with no government guarantees. The financial and trade liberalization of the Chilean economy, allowed the private sector to finance a huge expansion of domestic spending with foreign borrowing (Edwards and Cox-Edwards, 1992; Ffrench-Davis, 2002).

Figure 1

Latin America: Selected Financial Indicators



[1] Net flows of external debt are equal to new loan disbursements minus loan amortizations. It excludes IMF loans. Source: World Bank, *World Debt Tables* (various editions).
[2] Net transfers of external debt are equal to loan disbursements minus total debt service (loan amortizations plus interest payments). It excludes IMF loans. Source: World Bank, *World Debt Tables* (various editions).
[3] Latin America and the Caribbean. Source: International Monetary Fund.

new bank loans as part of the so-called concerted lending packages. For these loans, existing creditors jointly agreed to make additional loans as a measure to restructure debt payments (Edwards, 1989).

In light of the reversal in external financing, indebted countries were forced to adjust. In particular, they had to reduce, and in most cases eliminate, the difference between domestic absorption and income, which lead to a significant reduction in Latin American current account deficits during the 1980s (Figure 1). Moreover, given the amount of loan amortizations and interest payments, these countries had the urgent need to generate trade balances' surpluses. This was so since they

needed to be able to honor their foreign debt obligations. Yet, long term external debt net transfers stood at 2.06% of its GDP (16 billion dollars) in 1981, dropping to 0.31% of their GDP (two billion dollars) in 1982.[4,5] In 1983, resources net transfers reached minus 1.61% of their GDP (minus 9.9 billion dollars). In short, this process necessarily required a sharp adjustment in the region.

Going forward we focus on four Latin American countries, namely, Argentina, Brazil, Chile, and Mexico. During the 1980s, they all suffered a reversal in external financing and the total external debt of these countries represented 72% of the region's GDP in 1982. These make them a representative sample of the region.

2.1 The Economic Adjustment and Policy Response

Once a crisis starts the inevitable follows: that is, the policy response and the economic adjustment. As mentioned, we make a distinction between flows and stock problems. This distinction is useful, in particular, as the policy response is different in each case.

Usually, the adjustment regarding the flows is quite rapid and draconian. If there is some financing available, the adjustment can be more gradually achieved. Nonetheless, having a gradual adjustment, although desirable, jeopardizes credibility. In this respect, a market indicators' overshooting might be looked-for, as it adds credibility to the adjustment.

Generally, the crux of this adjustment is on expenditures. Two key variables are consumption and investment. Moreover, a decrease in a country's aggregate demand, relative to

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[4] Net transfers of long term external debt equals loan disbursements minus total debt service. Total debt service equals loan amortization plus interests payments.

[5] For this period, loan disbursements, loan amortizations, and loan interests are only available for long-term external debt in the *World Debt Tables* of the World Bank. Thus, the respective data for short-term net transfers are, to the best of our knowledge, not available.

its main trading partners, eventually leads to a real exchange rate depreciation. There are three ways of dealing with this issue. Firstly, one could actively manage the nominal exchange rate. Nevertheless, this will typically lead to inflationary problems. Secondly, one could manage inflation differentials vis-à-vis its main trade partners. However, if the trading partners have low levels of inflation, this will probably imply deflationary episodes which are associated with recessions. In effect, to be more competitive, the general price level has to be reduced, not only the nominal exchange rate. Thirdly, one could implement a combination of the both. In effect, as important economic trade-offs are present, the second best response is commonly a combination of policies. In sum, the flows adjustment and the concomitant correction in relative prices can be achieved through managing the exchange rate, the inflation differential, local minus external, or a combination of both.

However, with regards to the domestic debt, an increase in inflation helps toward reducing over-indebtedness. It helps since it dilutes the nominal debt issued by the government, decreasing its value in real terms. Accordingly, it acts as a risk-sharing mechanism to the extent that it forces agents to share in the adjustment burden, albeit imperfectly. On the contrary, deflation involves an increase in the real value of nominal debt and, in addition, leads to a yet more asymmetrical adjustment's burden. Furthermore, as mentioned, deflationary environments are associated with recessions.

What is more, the external debt service requires, for instance, two types of resource transfers. First, transfers from domestic private agents to the domestic public sector, which required sharp fiscal adjustments and restrictive credit policies. Second, transfers from the countries' debtors, mainly domestic governments, to foreign creditors, which necessarily involve acute adjustments in domestic absorption and surpluses in external accounts. Thus, in order to allocate resource transfers abroad, debtor countries commonly resort to a combination of expenditure-reducing and expenditure-switching policies.

Generally, once a stocks problem arises, it is the public sector that assumes it, as was the case in Latin America during the 1980s. Yet, in the European case, households and banks are facing a stocks problem as well. It is then fundamental that the stocks problem does not worsen and, in this context, to recognize the crucial role of backstops and debt relief.

Within a country, the stocks problem boils down to determine, either indirectly through a set of policies or directly through negotiation, which groups are going to sustain the adjustment's burden. Negotiations, for the obvious reasons, are cumbersome, as no one wants to take the hit. A common policy is inflation, as it redistributes the adjustment burden, as argued. Nonetheless, it comes with its very well-known costs. In the European case, given the institutional arrangements, inflation is not on the table; thus, a set of policies is essentially the same as a negotiation process. Furthermore, many of the contingencies we are now witnessing were never anticipated, which makes it an intricate problem, to say the least.

2.1.1 Flows

The adjustment policies contributed towards the reduction in domestic absorption, in investment expenditures, through different channels, and in some cases, in different components of consumption. First, an important part of any macroeconomic adjustment program is the set of expenditure reduction measures, largely fiscal restraint. These measures, in the short run, would tend to lessen economic growth. Thus, part of the observed decline in consumption and investment may be attributed to the reduction in economic activity.

The initial economic contraction associated with the macroeconomic adjustment along with the debt crisis' severity, affected consumption and investment through an adverse impact on private agents' confidence. The severe recession led to a wave of pessimistic expectations, which induced agents to cut on their consumption even more and reduce, put off, or even cancel investment expenditures (Serven and Solimano, 1993).

Second, private agents in highly indebted countries faced credit constraints in international financial markets. Adjustment programs usually included restrictive credit policies, which reduced the amount of domestic loanable funds available to the private sector (Green and Villanueva, 1991). These credit constraints affected households negatively and, thus, consumption. As a result, private firms had less access to financing during the 1980s, which contributed to the observed decline in investment rates in the period.

Third, adjustment programs also included real devaluations to correct external imbalances. During the 1980s Latin American authorities implemented nominal devaluations in their respective countries in order to generate real depreciations as part of the economic adjustment. This affected consumption adversely to the extent that households' budget constraints were reduced. In addition, these depreciations increased the cost of foreign capital goods in terms of domestic goods. Moreover, since most industries in Latin American countries had a high import content of capital goods, a real depreciation affected private investments negatively, mostly in the case of non-trading sectors that imported machinery and equipment (Buffie, 1986).

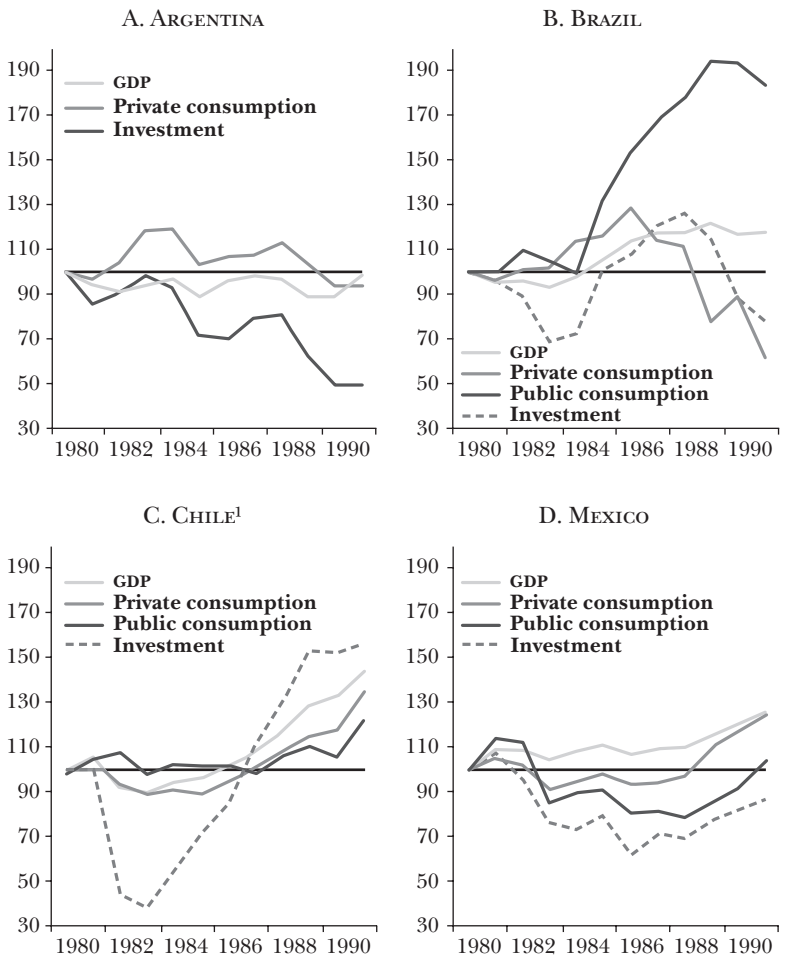
Consumption and investment expenditures were also negatively affected by other factors. In particular, the macroeconomic instability associated with high inflation rates implied a high degree of uncertainty, which itself had an adverse impact on investment (Rodrik, 1989). For instance, the lack of a stable macroeconomic environment meant that private investors faced high levels of uncertainty associated to possible large swings in relative prices. This situation tended to distort prices, making the assessment of investment projects more demanding and, as a result, reduced the agents' planning horizons.

All of the above contributed to depress consumption and investment. In order to illustrate the role played by different components of domestic expenditures in the adjustment process, Figure 2 shows the behavior of output, consumption, and investment for our selected group of countries during

the 1980s. As is clear, consumption and, for the most part, investment bore the adjustment. Complementing this information, Table 1 presents the investment to GDP ratios at the time. In the countries considered, investment ratios declined

Figure 2

GDP, Consumption and Investment
(index 1980=100)



[1] Investment 1981=100.
Source: International Monetary Fund.

Table 1

TOTAL INVESTMENT
(percent of GDP)

	1980	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*
Argentina	25	23	22	21	20	18	17	20	19	16	14	15
Brazil	21	21	19	15	14	17	17	20	21	23	18	18
Chile	NA	25	14	12	16	19	21	24	25	27	27	25
Mexico	28	28	25	22	21	23	20	21	21	21	21	21

NA: not available.
Source: International Monetary Fund.

after the debt crisis started in 1982, with Chile being particularly affected.

As can be seen in Figure 2, although with different dynamics, the adjustment in the components of domestic aggregate demand was very large and for very long. Although the adjustment's dynamics in Chile and in Mexico are a bit more similar, we can see that by the end of the 1980s and beginning of the 1990s, Brazil and Argentina were still very far from exiting the crisis.

The counterpart to the contraction of domestic absorption was a significant increase in net exports. Figure 3 shows the evolution at the time of exports and imports for Argentina, Brazil, Chile, and Mexico. As can be seen, their exports began to increase rapidly, while their imports registered a significant contraction. Additionally, economic activities and investment projects in Latin America required foreign capital goods and inputs, so the economic slowdown and investment contraction contributed to a decline in imports. Likewise, changes in relative prices associated to the real exchange rate depreciations led to a switch in expenditures towards domestic goods and away from foreign goods, contributing to a decline in imports as well.

The expenditure switching policies involved nominal devaluations to generate real exchange rate depreciations.[6] The corresponding changes in relative prices associated with the real depreciations were expected to boost net exports, contributing to improve the external accounts' balances.[7] This helped obtain foreign currency to meet the external debt payments. Clearly, the expansion in the tradable goods sector was expected to buffer the external shocks' negative impact on domestic economic activity.

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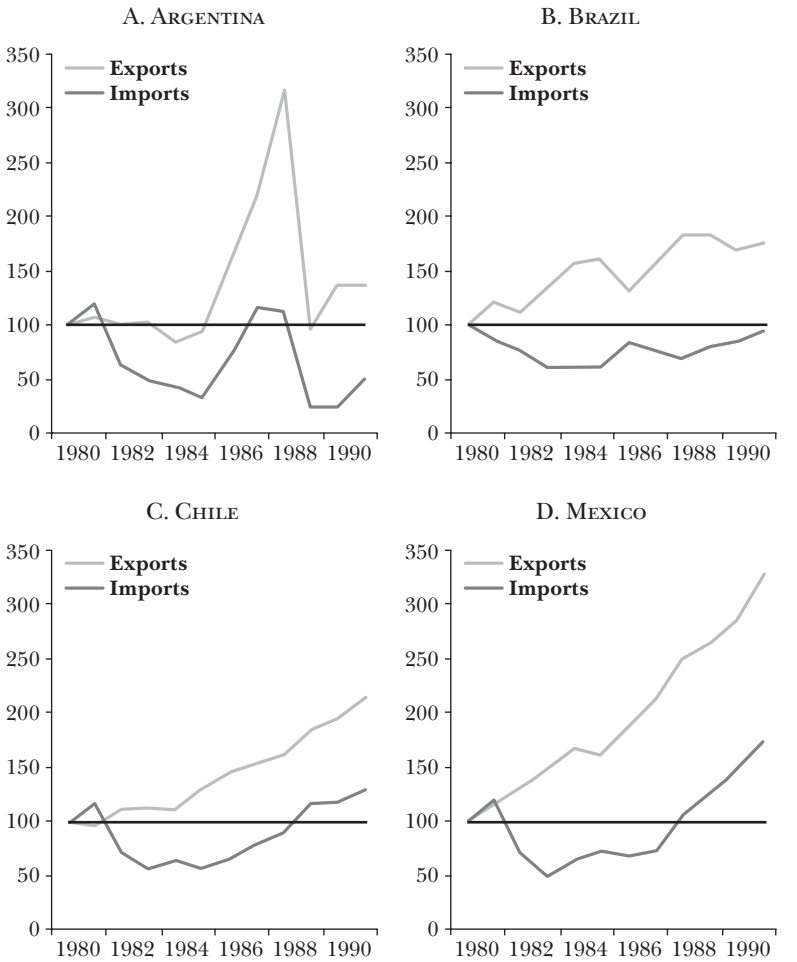
[6] Initially, in some cases nominal devaluations were combined with the adoption of trade restrictions (Edwards, 1987).

[7] According to the so-called Marshall-Lerner condition, a positive impact of a real depreciation on the trade balance requires the sum of the price-elasticity of demand for exports and imports to exceed 1.

Figure 3

IMPORTS AND EXPORTS
(index 1980=100)

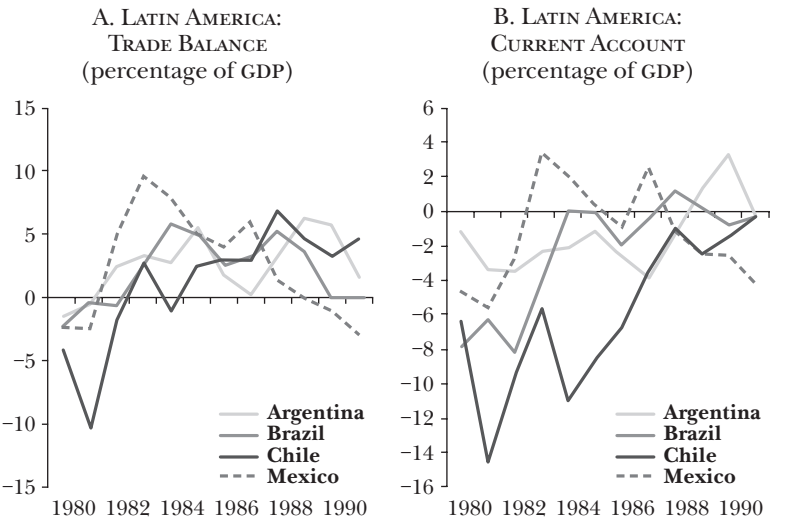


Source: International Monetary Fund.

Indeed, large nominal devaluations had an important role in depreciating the domestic currency in real terms. Figure 5 shows the rate of nominal devaluation for the selected group of Latin American countries. The degree of nominal exchange

Figure 4

AMERICA LATINA: EXTERNAL ACCOUNTS



Source: International Monetary Fund.

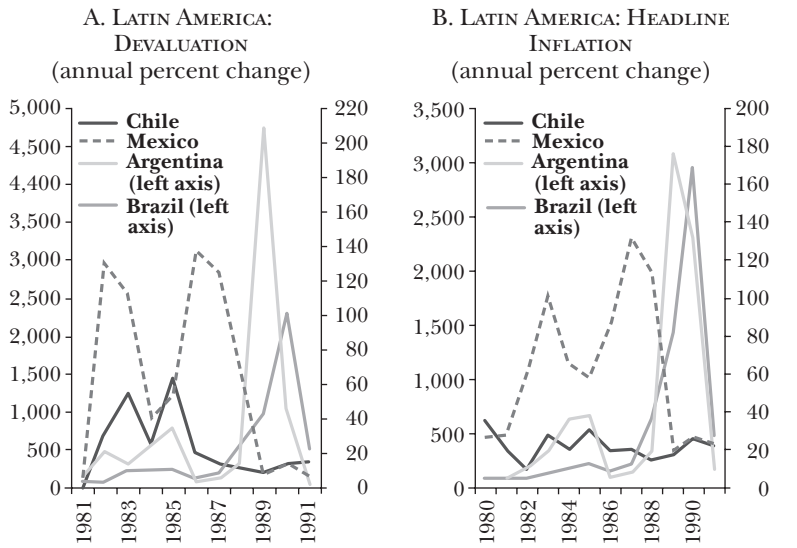
rate devaluation varied between countries, but they were generally significant. As a result, these countries suffered substantial increases in their domestic price levels. In this respect, Figure 5 also provides data on the inflation rates for these countries.

Attempting to prevent that the rise in domestic inflation did not erode the effect of nominal devaluations on real exchange rates, these countries followed active foreign exchange rate policies. In effect, the nominal parity was continuously adjusted. A common scheme was the adoption of crawling-peg regimes, where the nominal exchange rate was regularly devalued, mainly based on the differential between the domestic and the external rates of inflation (Edwards, 1989).[8] Accordingly,

[8] In addition, in some cases the exchange rate policy also consisted in adopting multiple exchange rates. For instance, in Chile and Mexico the private sector had access to foreign currency at preferential rates, when their purpose was the repayment of external debt.

Figure 5

DEVALUATION AND INFLATION



Source: International Monetary Fund.

these countries were able to induce real exchange rate depreciations, attenuating the economic contraction.

The demand for Latin American exports was supported by the global economic recovery following the 1981-1982 recession, as well as favorable global economic conditions during the rest of the decade. Thus, these countries were able to achieve an important turnaround in their trade balances, which were deficits in the early 1980s and became surpluses by the middle of the decade. The improvement in trade balances allowed these countries to start closing their current account deficits. Figure 4 depicts the trade balance and the current account, capturing the adjustments' magnitudes.

The practice of periodically resorting to nominal devaluations in order to maintain a depreciated real exchange rate directly contributed to the inflation rate's acceleration in Latin America (Figure 5). Indeed, as is well known, when

implementing real devaluations through nominal ones each time the latter tends to be less effective. This is so since agents need to be surprised. In effect, if agents have perfect-foresight regarding nominal devaluations, they will adjust their prices accordingly, leaving (ceteris paribus) the real exchange rate unchanged (e. g., see Calvo, Reinhart and Vegh, 1995).

In order to increase the chances of a surprise, policy makers will be tempted to devalue the nominal exchange rate every time in, yet, greater magnitude. Thus, a race between inflation and devaluations in the nominal exchange rate sets in and, thus, as mentioned, the inflation rate accelerates. This is an analogous problem to the possibility of surprising agents in a monetary policy context. The implementation of such policy had enormous costs in terms of inflation. Table 2 shows the bilateral real exchange rates vis-à-vis the USA, for each of the four countries considered. As can been seen, in these countries, the real exchange rate experienced a depreciation during the 1980s, as would be expected given the need to correct a current account problem, albeit with ever increasing inflation rates. These issues underscore the challenges of implementing a real devaluation through a nominal one.

Evidently, as the crisis erupted, indebted countries followed expenditure reducing policies, focused on improving fiscal accounts by cutting public expenditures and increasing tax rates. As mentioned, most Latin American governments ran large fiscal deficits in the years prior to the crisis, relying heavily on external borrowing to finance them. External debt was mostly owed by the public sector. Thus, the reduction of net debt flows and the undertaking of private foreign debt by governments made the fiscal accounts' adjustment a requirement for external debt servicing. In fact, whether the expenditures were private was inconsequential, since eventually losses, from banks or other institutions, would be assumed by the government. For instance, regarding the Mexican crisis in the 1990s, it has been widely discussed whether the original problem was the public or private expenditures.

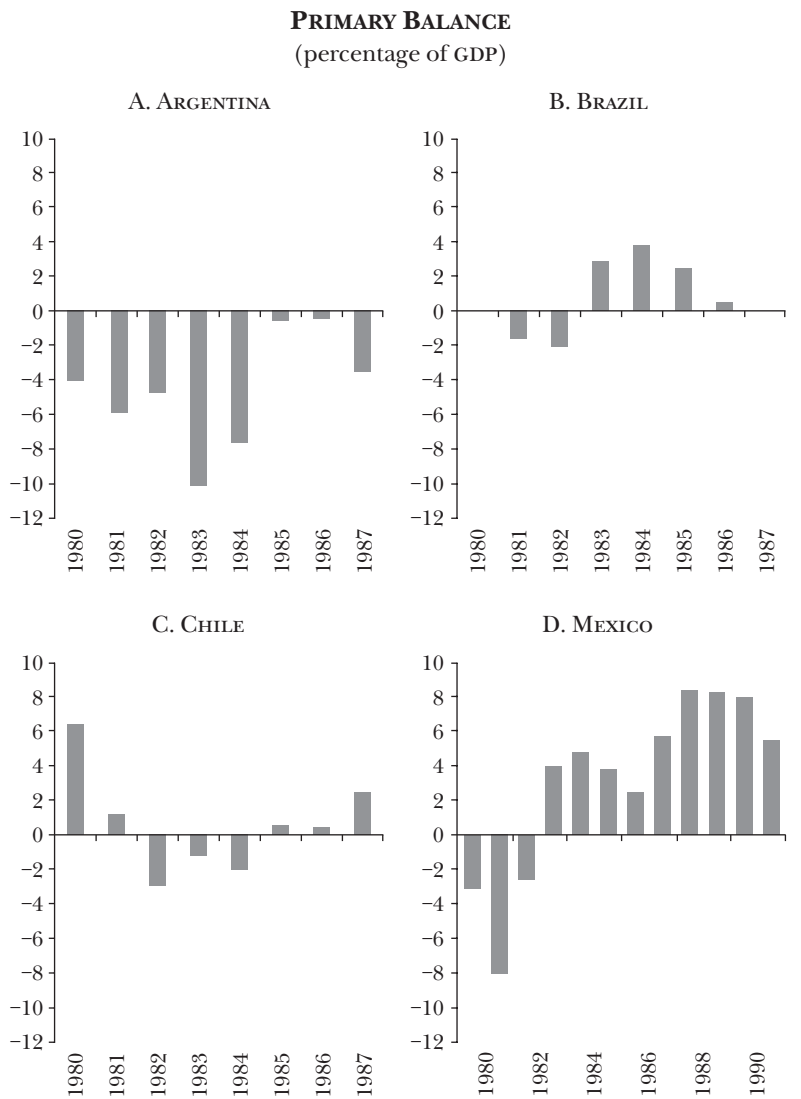
Table 2

REAL EXCHANGE RATE INDEX
Local currency vs.dollar, 1980=100

	1980	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*
Argentina	100	129	305	288	266	317	267	271	260	415	209	157
Brazil	100	97	99	139	159	170	154	140	133	99	82	88
Chile	100	92	116	146	159	205	210	206	209	204	195	191
Mexico	100	91	141	153	135	136	177	178	143	135	129	117

Note: The real exchange rate is calculated as EP*/P, where P is the CPI of the country, E is the exchange rate in units of domestic currency per USA dollar, and P* is the USA CPI. An increase in the index implies a real depreciation.
Source: International Monetary Fund.

Figure 6

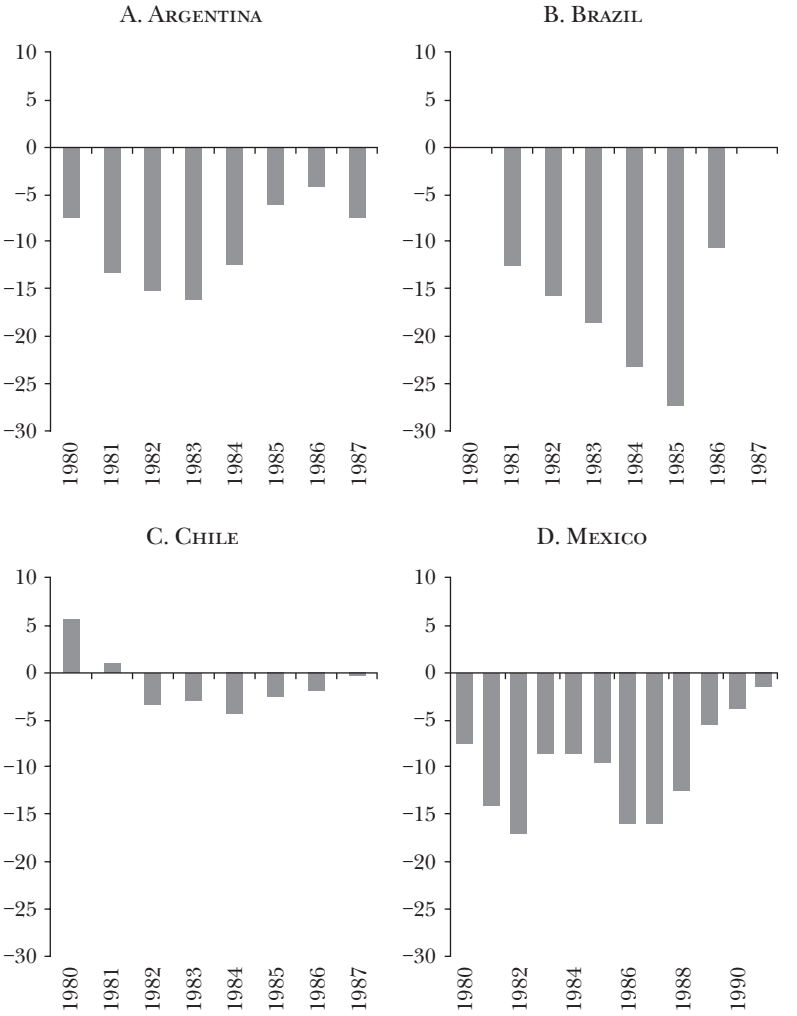


Sources: Easterly (1989) and Banco de Mexico, *The Mexican Economy*, 1996.

Figure 6 and Figure 7 present data on the primary balances and public sector borrowing requirements for the countries considered. These countries were able to sharply improve their

Figure 7

Public Sector Borrowing Requirements
(percentage of GDP)



Sources: Easterly (1989) and Banco de Mexico, *The Mexican Economy*, 1996.

primary balances.[9] In particular, after 1982, Brazil and Mexico reached surpluses. In the case of Mexico, the magnitude of the adjustment was significant, registering from 1981 to 1988 a change of 16 percentage points, as a proportion of their GDP.

In spite of the great efforts put into the reduction of public expenditures and the collection of higher fiscal revenues, deficits (measured by public sector borrowing requirements) increased during the adjustment process. This was mainly due to the sharp rise in government interest payments, since an important part of the foreign loans had been obtained at floating rates and an unexpected increase in international interest rates took place around the time the crisis erupted. [10]

The increase in rates put significant pressure on Latin American countries' fiscal positions. In fact, domestic currencies' devaluations, which were implemented as part of the adjustment programs, increased the external debt service in terms of domestic currency and, consequently, contributed to the deterioration of fiscal balances.[11]

Nominal interest rates increased significantly. However, given the inflation rates at the time, real rates were very low or, mostly, negative. The foreign debt crisis significantly affected the sources of finance of public sector deficits. Up to beginning of the crisis, fiscal deficits were to a great extent financed by external borrowing. However, the sharp reduction

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[9] The primary balance excludes debt interest payments. This fact will be important later on.

[10] The typical external loan contract consisted of a syndicated long-term credit with a floating interest rate. Approximately two-thirds of developing countries' debt contracts were tied to floating LIBOR rates (FDIC, 1997). In this context, the monetary tightening implemented by the Federal Reserve led to a sharp increase in dollar-denominated interest rates, including the LIBOR rate, significantly increasing debt service costs. LIBOR rates were sensitive to changes in short-term USA interest rates because eurocurrency deposits were mainly a dollar-denominated market.

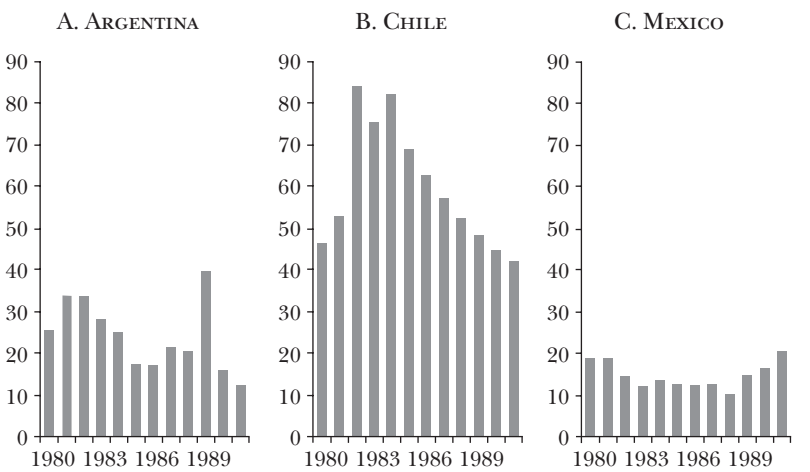
[11] The negative effect of devaluations on fiscal accounts was attenuated in those countries, where the main exporting firms were state owned enterprises.

in external financing to Latin American countries forced their governments to significantly rely on inflationary taxes and the issuance of domestic public debt (Easterly, 1989).

Moreover, with the objective of obtaining additional revenues, governments followed restrictive financial practices accompanied by inflation. In general, governments essentially under-paid captured domestic savers through different policies, including exchange rate controls and restrictions to capital mobility, controls on domestic interest rates that kept them at relatively low levels, forced lending to governments by domestic financial institutions, among others. In some cases, public sector ownership of commercial banks made the credit process to the government direct. Most importantly, as high inflation rates diluted the debt denominated in nominal currency, de facto, another adjustment mechanism was set in place. Revisiting Figure 5, one can assess the extent to which creditors were penalized, notably in Argentina and Brazil. In effect, this led to resource transfers from creditors to debtors.

Figure 8

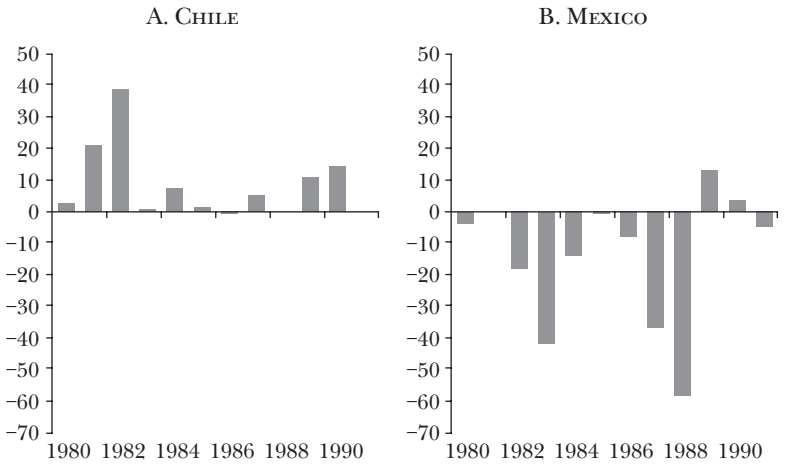
Domestic Credit to Private Sector
(percentage of GDP)



Source: World Bank.

Figure 9

EX-POST REAL DEPOSIT RATE
(percentages)



Source: International Monetary Fund.

These measures contributed to reduce the credit granted to the private sector and maintained ex post real interest rates at extremely low or negative levels. In this respect, Figure 8 shows the evolution of domestic credit to the private sector in Argentina, Chile, and Mexico during the debt crisis. Figure 9 illustrates the low values that the ex post real deposit rates reached in Chile and Mexico during the 1980s.

In addition, the curb set on wages was another element of the expenditure-reducing policies. There are two main elements to this. First, firms faced lower real wages, which allowed them to be relatively more competitive abroad. Second, as domestic absorption needed to be reduced, the curb on real wages allowed labor to take some of the associated losses. Table 3 depicts the real urban minimum wage for our selected group of Latin American countries. It is clear that these countries experienced an important decline in real wages, consistent with the needed reduction in absorption and with the concomitant real depreciation of the exchange rate. In view of the downward

Table 3

REAL URBAN MINIMUM WAGE
Index 1980=100

	1980	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*
Argentina	100	98	98	137	168	113	110	121	94	42	40	56
Brazil	100	106	107	96	87	89	89	73	69	72	53	60
Chile	100	116	117	94	81	76	74	69	74	80	88	96
Mexico	100	102	93	77	72	71	65	62	55	51	46	44

Source: ECLAC, *Balance preliminar de las economías de América Latina y el Caribe* (various editions).

nominal wage rigidity, the inflationary process played a key role in reducing the real wages.

As an additional issue, the government's credibility is an integral component of any adjustment program. In fact, policy actions' effectiveness depends on it to a great extent. In many cases in Latin America, policy actions were implemented as part of IMF stand-by programs. These involved conditioned additional access to loans from official institutions and rescheduled existing debt repayments, on the adoption of adjustment measures.

Once a country is immersed in a debt crisis, its government usually has lost most or all credibility, since typically it contributed to the macroeconomic imbalances' buildup, among others by adopting expansionary fiscal policies. Regaining and maintaining such credibility from multilateral institutions is certainly a valuable option. In particular, obtaining financial support from these institutions and recognizing that this support will be subject to conditionality can help gain credibility (Carstens, 2012).

2.1.2 Stocks

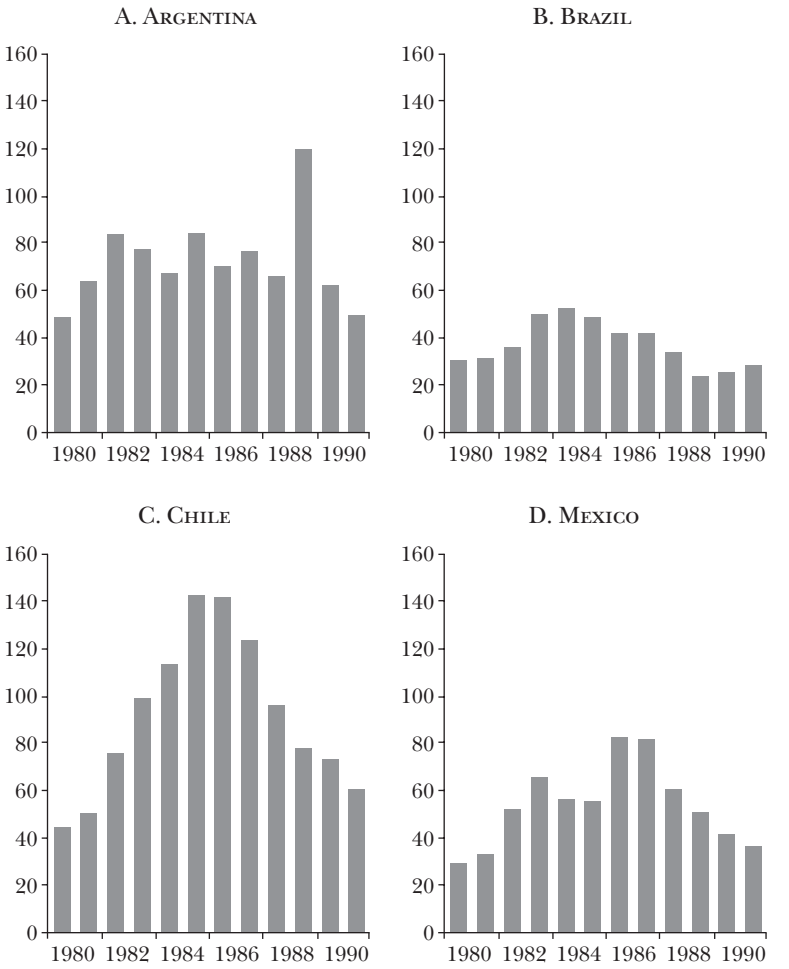
To grasp the magnitude of the stocks problem, Figure 10 shows the total foreign debt to GDP ratios during the 1980s and the beginning of the 1990s.[12] These ratios increased in the early 1980s and continued growing after the crisis erupted in 1982. In fact, they only began to decline starting in the second half of the decade.

In this context, the adjustment process required resource transfers from debtor countries to foreign creditors. In order to analyze how these transfers took place, first, consider the countries' foreign debt structure. Table 4 shows the evolution of their total external debt with its main components: long-term debt, short-term debt, and IMF credit. Table 5 presents data

[12] Total foreign debt includes long term debt, short term debt, and IMF credit.

Figure 10

TOTAL FOREIGN DEBT
(percentage of GDP)



Source: World Bank, *World Debt Tables* (various editions).

on the long-term foreign debt's structure during the 1980s. It classifies foreign debt into two groups, based on the issuer's type: *i)* public, or publicly guaranteed debt; and, *ii)* nonguaranteed private debt.

By the end of 1982, except for Chile, the foreign debt's bulk was held by the public sector. For instance, the percentage of total long-term external debt that was either owed by the government or by the private sector with a government guarantee was 58.6%, 69.1%, 37.5%, and 86.4%, in Argentina, Brazil, Chile, and Mexico, respectively. Moreover, these figures increased over the following years. This strongly suggests that the public sector directly assumed external debt obligations that were originally private.

During the 1980s, the referred resource transfers did not involve a backstop. Accordingly, most of these resources were obtained through the inflation tax, giving leeway to a race between inflation and foreign exchange depreciations. The lack of backstops played against a more rapid recovery in this episode.

In contrast, during other crises such as Mexico's in the 1990s, the presence of a backstop allowed the government to be able to count on extensive immediate resources. In turn, it was able to implement active policies which involved supporting the banking sector. This led, among others, to a more agile renegotiation of private credits in the economy, permitting households and banks to improve their balance sheets more rapidly. Without having at the beginning of the crisis market access, backstops through a program with the IMF and through other official international sources, in combination with draconian measures of adjustment, permitted to send a signal that the stocks problem would be tended to and, thus, led to a much quicker dissipation of uncertainty. Of course, this led to a more rapid recovery.

2.2 The Exit to the Debt Crisis

In spite of the adjustment programs and given the crisis' magnitude, by the mid-1980s it was clear that the strategies had proved to be insufficient. At that time, domestic economic activity had not fully recovered and the debt to GDP ratios kept growing. Moreover, resource transfers from Latin American

Table 4

STRUCTURE OF TOTAL EXTERNAL DEBT

	1981	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
Argentina									
Total external debt (percent GDP)	64	84	77	68	84	71	77	66	120
Long term debt (percent total external debt)	64	62	78	76	82	86	87	84	82
Short term debt (percent total external debt)	36	38	19	22	13	8	6	10	13
Use of IMF credit (percent total external debt)	0	0	3	2	5	5	7	6	5
Brazil									
Total external debt (percent GDP)	31	36	50	53	49	42	42	34	24
Long term debt (percent total external debt)	81	81	83	86	87	88	86	88	81
Short term debt (percent total external debt)	19	19	14	10	9	8	11	9	17
Use of IMF credit (percent total external debt)	0	1	3	4	4	4	3	3	2

Chile									
Total external debt (percent GDP)	50	77	99	114	143	142	124	96	78
Long term debt (percent total external debt)	81	81	82	86	86	86	84	82	77
Short term debt (percent total external debt)	19	19	14	10	8	8	9	11	16
Use of IMF credit (percent total external debt)	0	0	3	4	5	6	7	7	7
Mexico									
Total external debt (percent GDP)	34	53	66	57	55	83	82	61	51
Long term debt (percent total external debt)	68	69	88	91	91	90	90	86	84
Short term debt (percent total external debt)	32	30	11	7	6	6	5	9	11
Use of IMF credit (percent total external debt)	0	0	1	2	3	4	5	5	5

Source: World Bank, *World Debt Tables* (various editions).

Table 5

STRUCTURE OF LONG-TERM EXTERNAL DEBT

	1981	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
Argentina									
Long-term external debt (percent GDP)	41	52	60	51	69	61	67	56	98
Public and publicly guaranteed (percent long term external debt)	46	59	71	72	89	90	96	96	97
Private nonguaranteed (percent long term external debt)	54	41	29	28	11	10	4	4	3
Brazil									
Long-term external debt (percent GDP)	25	29	42	45	42	37	36	30	20
Public and publicly guaranteed (percent long term external debt)	69	69	74	79	81	85	86	89	93
Private nonguaranteed (percent long term external debt)	31	31	26	21	19	15	14	11	7

Chile									
Long-term external debt (percent GDP)	41	62	81	98	124	121	104	79	60
Public and publicly guaranteed (percent long term external debt)	36	38	45	62	73	81	86	85	78
Private nonguaranteed (percent long term external debt)	64	62	55	38	27	19	14	15	22
Mexico									
Long-term external debt (percent GDP)	23	36	58	52	50	74	74	52	43
Public and publicly guaranteed (percent long term external debt)	81	86	82	81	82	83	86	93	95
Private nonguaranteed (percent long term external debt)	19	14	18	19	18	17	14	7	5

Sources: World Bank, *World Debt Tables* (various editions).

countries to foreign creditors had become a huge drag on economic growth in the region.

At this point it is convenient to recap on several key aspects of the crisis. First, the drastic adjustments in absorption were deemed to be insufficient. Second, any gain in competitiveness induced by real depreciations is not permanent. Moreover, they will eventually lead to an unstable inflation process. Third, part of the adjustments was achieved through inflation which, as we know, is not conducive to economic growth. Fourth, to grow and regain in the process dynamic investment, through several channels, competitiveness has to be generated through structural reforms. Now, resources are needed for investment, for which financing is necessarily required. Fifth, obtaining financing is difficult if the society as a whole faces over-indebtedness, perhaps through the public sector. Thus, resources that are currently used to service debts have to be allocated to investment. At this point the process of renegotiation is essential. Sixth, to create investment opportunities, structural reforms have to be implemented.

2.2.1 Structural Reforms

An important factor for Latin American exiting the debt crisis was the implementation of structural reforms. In addition to the expenditure switching and reducing policies as previously discussed, a number of countries started a process of structural changes that eventually enhanced their potential for economic growth.

In this context, in the period previous to the foreign debt crisis, Latin American countries, in general, followed inward-oriented trade policies based on import-substitution industrialization strategies (Sachs, 1989). This led to the development of inefficient domestic industries that eventually faced great difficulties when competing with foreign industries. Thus, once the debt crisis began and foreign currency for external debt repayments became an imperative, these industries could only start exporting by implementing significant cuts in real

wages and with substantial real exchange rate depreciations.

In this setting, it was clear that Latin American countries had to take measures to increase productivity and improve competitiveness. In order to do so, these countries implemented some structural reforms, including trade liberalization, privatizations, and, generally, a reduction of the government's role in the economy. Most of these reforms began to be adopted during the second half of the 1980s.[13]

For instance, Mexico adopted comprehensive trade reforms and privatized state owned enterprises. In this way the Mexican economy rapidly evolved from a closed one, with a high degree of state intervention, into a more open and a more market-oriented one. Moreover, these reforms allowed Mexico to successfully change the composition of its exports by significantly increasing the fraction of manufacturing products within its total exports.

On the other hand, it should also be said that, in some cases, the greatest benefits to privatizations were the resources allocated to the public finances. In various cases, such privatizations meant that monopolies were simply reassigned from the public to the private sector. Needless to say, this affected very negatively the perception about the benefits and goodness of privatizations.

2.2.2 Debt Renegotiation

As mentioned, external debt service had become a huge drag on economic growth in Latin America. The necessary adjustments in the macroeconomic stance and even the short run costs of implementing structural reforms meant through the years very large costs in terms of economic activity and, in

[13] Structural reforms involved some income distribution changes, favoring some groups and, regrettably, affecting others. For instance, trade liberalization hurts import-substitution industries. In this case, a rapid and decisive implementation was needed. Otherwise special interest groups would have had enough time to organize and increase their lobbying activities against these reforms.

general, in terms of living standards. But this leads to a significant complication. Even if at the outset of the crisis society is well aware of the need to adjust, after a while fatigue sets in. Indeed, in the appendix we show that a benevolent government will, at some point, optimally default on its obligations even if that means losing market access to financing. This means that, in addition to structural changes, the resumption of growth requires debt renegotiations. By the end of 1982, many Latin American countries were in arrears with respect to their foreign debt obligations (Edwards, 1989). On the supply of funds side, in light of the great exposure of advanced economies' commercial banks to the indebted countries, the debt crisis posed a threat to the international financial system (Crowley, 1993). Thus, negotiations between creditors and debtors to restructure the existing loans became an imperative.

The fact that most of the external debt had been contracted with banks, made the lenders' renegotiation process less atomized, in effect, less cumbersome. In contrast to unidentified bondholders, commercial banks are easily identified. Furthermore, selling loans to a third party was not a common practice at the time, since there were no well-developed secondary markets. These conditions facilitated the creditors' coordination and made the renegotiation process easier (Devlin and Ffrench-Davis, 1995). Thus, banks were capable of forming committees to negotiate with debtor countries.

Table 6 presents the structure of long-term external public and publicly guaranteed debt, for the countries considered, as a function of the creditor's type. It shows whether the debt was owed to official lenders or to private creditors. For Argentina, Brazil, Chile, and Mexico, most of the debt was owed to private financial institutions, predominantly banks. In general, these institutions had granted their loans as syndicated credits.

Given the banking systems' risk in developed countries, the governments of these countries, mainly the US, and multilateral financial institutions such as the IMF, played a key role in the renegotiation process. Initially, the lack of foreign currency to make interest and principal payments on debt obligations

Table 6

STRUCTURE OF LONG-TERM EXTERNAL PUBLIC AND PUBLICLY GUARANTEED DEBT BY CREDITOR
(percent of long term external public and publicly guaranteed debt)

	1982	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
Argentina								
Official creditors	12	11	10	13	15	18	18	19
Commercial banks	43	51	54	55	56	58	59	53
Other private creditors	44	38	36	32	29	24	23	28
Brazil								
Official creditors	17	17	18	21	24	27	27	29
Commercial banks	67	69	72	67	64	61	62	59
Other private creditors	17	14	11	12	12	12	11	12
Chile								
Official creditors	23	19	14	16	20	25	33	42
Commercial banks	66	72	80	78	75	70	61	52
Other private creditors	11	9	6	6	5	5	6	5
Mexico								
Official creditors	13	10	10	12	16	19	20	22
Commercial banks	75	75	77	77	73	72	68	66
Other private creditors	12	15	13	11	11	10	12	12

Sources: World Bank, *World Debt Tables* (various editions).

was perceived as a temporal liquidity problem. Thus, debt rescheduling was the predominant form of debt restructuring in the early years of the crisis.

Overall, the negotiating process contained several elements: *a)* the rescheduling of debt-service payments, including principal and interests; *b)* in some cases, the partial refinancing of interest payments through concerted loans, in which commercial banks agreed jointly to grant additional loans to indebted countries; *c)* new lending from official sources, including the IMF and the World Bank; and, *d)* IMF stand-by programs. Up to 1989, the renegotiation process had mainly focused on restructuring debt payments.

Subsequently, in 1989 it was recognized that the Latin American countries were immersed in a severe problem of insolvency and not one of a mere lack of liquidity. Thus the so-called Brady Plan was implemented. This plan entailed the need to provide debt relief.[14] Thus, the focus was on the reduction of debt and not on its maturity profile. Under this plan, countries could exchange existing loan contracts for Brady bonds. There was a set of options for debt relief through these bonds: a discount on the principal, a reduction in interest rates, or an increase on the debts' average maturity.

More specifically, the debt relief plan worked as follows. As a result of negotiations between debtor governments and creditor banks, a certain reduction on debt was agreed upon. Then, the outstanding debt was exchanged for new bonds, which had their principal and interests guaranteed. Debtor governments purchased US Treasuries, which served as collateral and, thus, guaranteed the bonds. The process helped reduce the external debt burden, which freed resources that were previously used to make debt repayments. In this way, debt renegotiation, both in maturity structure and installments, played an important role in Latin America exiting its debt crisis. As a result of the

[14] The Brady Plan is attributed to Nicholas F. Brady, Secretary of the Treasury from September 1988 to January 1993. Other countries outside Latin America took part of the Brady Plan.

process of debt renegotiation, over indebtedness stopped being a drag on growth. Since the freed resources were used to achieve a less restrictive fiscal stance, this led very quickly to a much better growth scenario, improving expectations markedly. Most importantly, all of this permitted countries to stop having to rely on the inflation tax to close their intertemporal budget gaps, that is, to stop having to monetize their deficits.

To sum up, to exit the debt crisis it was initially necessary to address the macroeconomic imbalances that led to it in the first place. This required an adjustment plan based on expenditure reduction and switching measures. Steps of this nature, mainly expenditure reducing policies, have already been taken by the respective authorities in the context of the euro area's crisis. Yet, irrespective of whether the magnitude of these adjustments is enough, they essentially address the flows problem, as we will see in more detail below.

Nonetheless, considering the crisis' severity, the referred measures were crucially complemented by structural reforms, and debt relief through the Brady Plan. As we explore in the next section, the implementation of similar structural reforms has been a difficult process in the euro area for reasons explained therein. Addressing simultaneously in a credible way the flows and stocks problem, will break the costly feedback loop between a dire macroeconomic situation and extremely bad expectations equilibrium, letting an economy exit the crisis a lot sooner and with less costs.

Additionally, financial assistance from multilateral institutions, particularly the IMF, was interpreted as a *seal of approval* for the policy actions and reforms implemented. This, in turn reinforced the credibility of the referred measures. In the euro area case, some progress has been done in this front, in particular financial assistance provided by the European Union and the IMF, as we describe subsequently. These institutions have conveyed some level of credibility. Yet, as we argue below, we believe more concrete steps, specifically much larger backstops and outright debt relief in order to be credible, have to be taken sooner rather than later.

3. THE EURO AREA SOVEREIGN DEBT CRISIS

Based on the Latin American crises, in particular during the 1980s, we explore the current sovereign debt crisis in Europe. We start briefly considering some of the crisis' origins, to then analyze the imbalances' magnitude in the euro area. Equally, we make the distinction between flows and stocks problems, as in the previous section. Centrally, we discuss the adjustment process, underscoring how the current monetary arrangement in the region has been problematic for the crisis. Finally, we consider some different courses of action for highly indebted countries in Europe, as well as some of the associated challenges.

In the years before the current global financial crisis a number of euro area countries, like the Latin American countries in the 1970s and the early 1980s, developed large macroeconomic imbalances that led to large, untenable current account deficits. In a nutshell, as is always the case, this resulted from expenditures being greater than income, a flows problem that through the years accumulated to a very large stocks problem. In some countries, such as Greece, domestic governments allowed public expenditures to run well ahead of fiscal revenues, leading to huge fiscal deficits. In other countries, such as Spain and Ireland, the growing imbalances can be attributed to the private sector. These were associated to sharp increases in asset prices, particularly in the housing sector and the excessive leverage taken by private agents.

The large external deficits –in countries such as Greece, Ireland, Italy, Portugal, and Spain– reflected macroeconomic mismanagement and, perhaps more prominently, differences in productivity among some members of the euro area, which goes beyond macroeconomic mismanagement. In particular, the so-called peripheral countries tend to have much higher production costs than those corresponding to core countries, such as Germany. In fact, Germany, running a current account surplus, is the main counterpart to the countries experiencing large external deficits within the European Monetary Union.

Productivity differentials are due to several factors, in particular, rigid labor markets, and overly generous pension systems, among others.[15] Evidently, membership in the monetary union facilitated the imbalances' buildup, since the introduction of a single currency had de facto eliminated the foreign exchange risk among its members and also generated the perception of much lower credit risk spreads, leading to a higher degree of financial integration and lower interest rates (Spiegel, 2008; IMF, 2011). Thus, the imbalances' development was associated with a trend of core countries lending to peripheral countries at untenably low interest rates and, accordingly, having the latter governments and private agents accrue considerable debts.

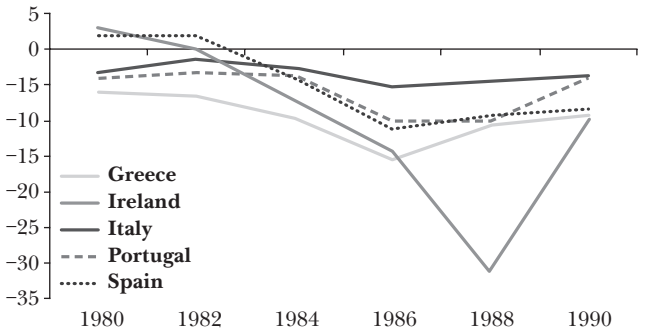
In the euro area, a number of events contributed to the deterioration of fiscal accounts, a flows problem, and an increase in public debt levels, a stocks problem. These took place after the global crisis' outbreak, which started in the USA economy and in turn spread to the euro area and, eventually, to the rest of the world. First, the negative impact of the global recession on domestic economic activity contracted the tax base and led to a significant decline in fiscal revenues (e. g., see IMF, 2010a, and Lane, 2012). Second, in order to support economic activity, governments adopted fiscal stimulus measures, which increased fiscal deficits and public sector indebtedness (e. g., see IMF, 2010a, and ECB, 2010). Finally, given the weak position of domestic financial institutions, governments implemented packages to support them, deteriorating fiscal positions, and adding to the public debt (e. g., see IMF, 2010b, and Lane, 2012). The combination of these factors pushed fiscal deficits to GDP ratios to even higher levels (Figure 11).

Moreover, the fiscal positions' deterioration and the consequent increase in public debt levels raised concerns about

[15] During the sovereign debt crisis, it has been common among analysts and policymakers to refer to the highly indebted European countries –Greece, Ireland, Italy, Portugal and Spain– as the euro area periphery, in contrast to the group of countries, including Germany and France, among others, as the euro area core.

Figure 11

FISCAL BALANCE
(percentage of GDP)



Source: International Monetary Fund, *Fiscal Monitor.*

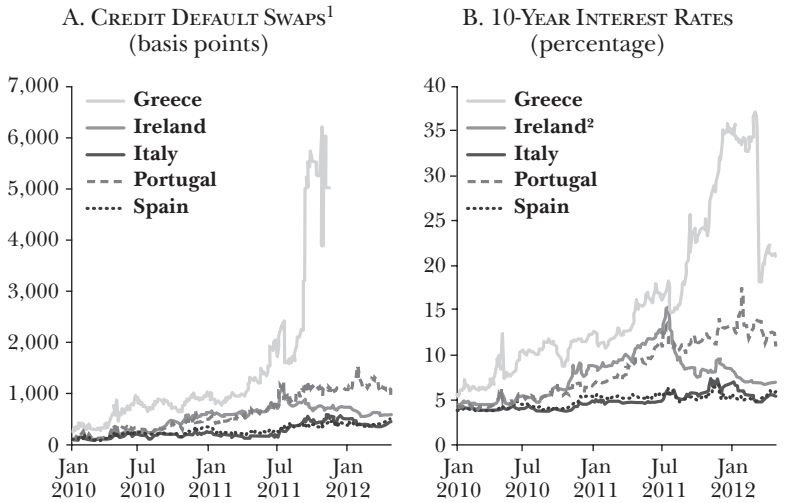
the creditworthiness of a number of euro area countries. As a result, the credit risk premium and financing costs increased for these countries. In some cases, accordingly, public debt was downgraded. What perhaps distinguishes this crisis from most others are two elements: first, the very adverse feedback of problems in the sovereign debt market and the banking system and, given the size of the monetary union, its systemic nature. Figure 12 depicts the evolution of credit default swaps (CDS) and long term interest rates for Greece, Ireland, Italy, Portugal, and Spain.

3.1 The Economic Adjustment and Policy Response

The economic adjustment in Europe has been, for the most part, based on expenditure reducing measures. More specifically, euro area countries have already put in place expenditure reducing policies, such as fiscal restraint. These programs have been complemented by the financial assistance of the European Union and the IMF. In late 2011, the creation of a new fiscal pact was announced. This pact focuses on fiscal discipline and intends to strengthen the enforcement of

Figure 12

SELECTED EUROPEAN COUNTRIES: FINANCIAL INDICATORS



Source: Bloomberg.
[1] 5-year CDS.
[2] 9-year interest rate.

European Union rules with respect to fiscal accounts and debt levels.

In short, expenditures in excess of available disposable income have to be reduced, addressing the flows problem. In effect, absorption has to adjust to levels consistent with available financing. However, the necessary reduction in aggregate demand is being worsened by the banking sector difficulties. As was mentioned, there is a negative feed-back loop between problems in the banking sector, the real economy, and the public finances which is making things much worse. This sets the stage for the use of backstops and for debt relief. Nonetheless, given the moral hazard problems, we believe that reductions in the fiscal and current account deficits to zero are crucial as a commitment signal from the recipient country.

3.1.1 Flows

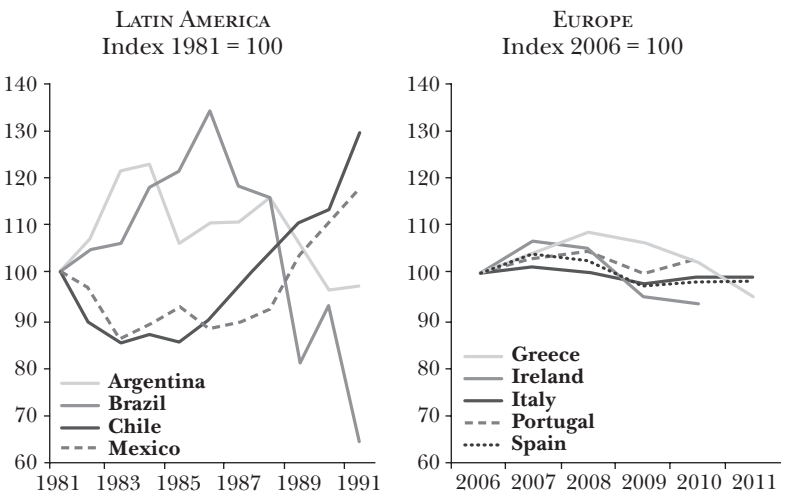
Evidently, the two key variables which have to adjust in a crisis are consumption and investment, both public and private. For an initial assessment of consumption, Figure 13 depicts the respective paths for the selected countries in Latin America and the euro area. In the first case, the adjustments in consumption for Chile and Mexico began in the early 1980s, while in the case of Argentina and Brazil, they took place later in the decade. In the European case, although the diminishing trend is clear, so far they have not been drastically affected.

Figure 14 contains data on the real GDP index for our selected group of euro area countries. Needless to say, their GDP in 2011 was at levels lower that those observed prior to the crisis.

Currently, in the euro area the contraction in economic activity has been associated with a more drastic decline in investment expenditures, as compared to Latin America in the 1980s. Figure 15 depicts the evolution of investment as a fraction of

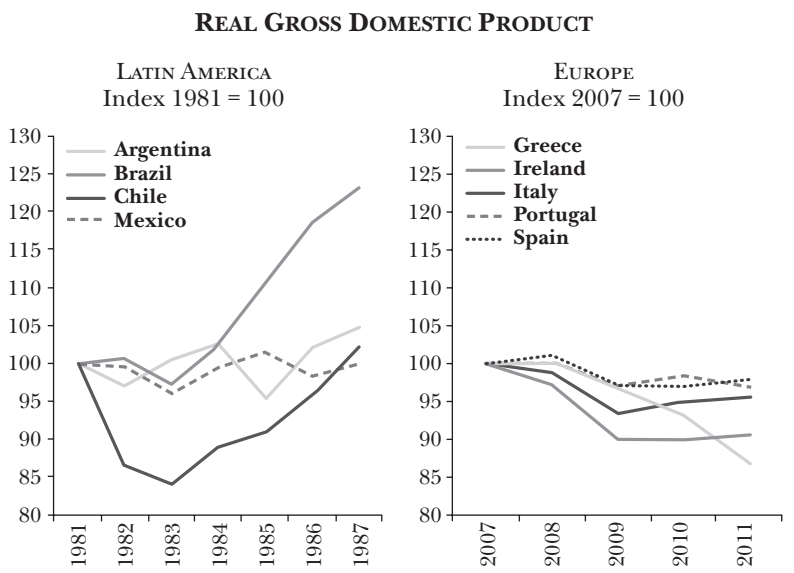
Figure 13

PRIVATE CONSUMPTION



Source: International Monetary Fund.

Figure 14



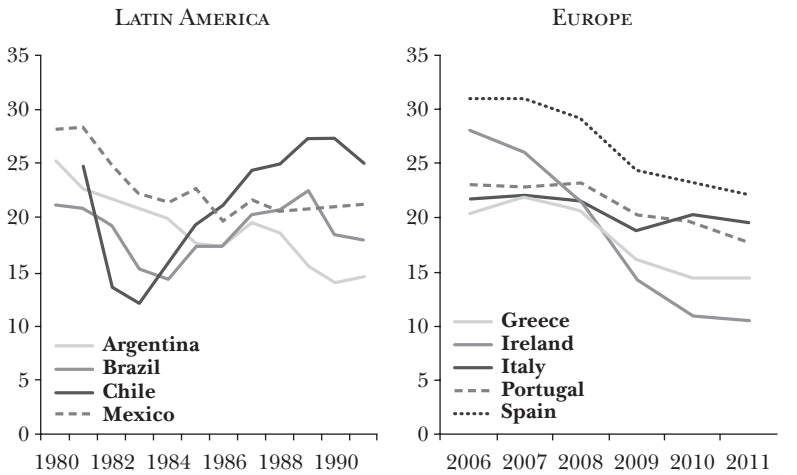
Source: International Monetary Fund.

GDP in both cases. As is clear, the adjustment in investment in Europe has been more acute. Centrally, the sharp fall in investment expenditures has important consequences for economic growth in the future. In this sense, the crisis has not only been costly in terms of current output, but also in terms of unfavorable growth prospects, which will be eventually reflected in consumption's trends.

Also, it seems to be the case that these countries have not been able to consolidate their fiscal accounts, despite the efforts made to do so. To gain a sense of how both cases contrast, Figure 16 presents the primary balances for the selected group of Latin American countries in the 1980s and for a number of peripheral European countries in recent years. In general, the countries in the former group, except for Argentina, were able to achieve primary surpluses by the mid-1980s. In contrast, most of the euro area countries in the periphery experienced deficits in 2011 (Figure 16) and are currently still struggling.

Figure 15

INVESTMENT
(percentage of GDP)



Source: International Monetary Fund.

All in all, based on the data provided, investment has taken a significant toll (Figure 15). Since real GDP has decreased (Figure 14) and consumption (Figure 13) has not drastically changed, there has been an increase in government expenditures. Nevertheless, this cannot go for long, as primary balances are, in most cases, still negative (Figure 16).

As for the external accounts, Figure 17 shows the current account as a fraction of GDP for the selected Latin American countries in the 1980s and some euro area countries in recent years. It seems that despite the fiscal consolidation plans implemented, most of the peripheral European countries have not been able to close their current account deficits. For instance, countries such as Greece and Portugal are still running very large external deficits. These are also in general greater than those corresponding to Latin American countries in the eighties.

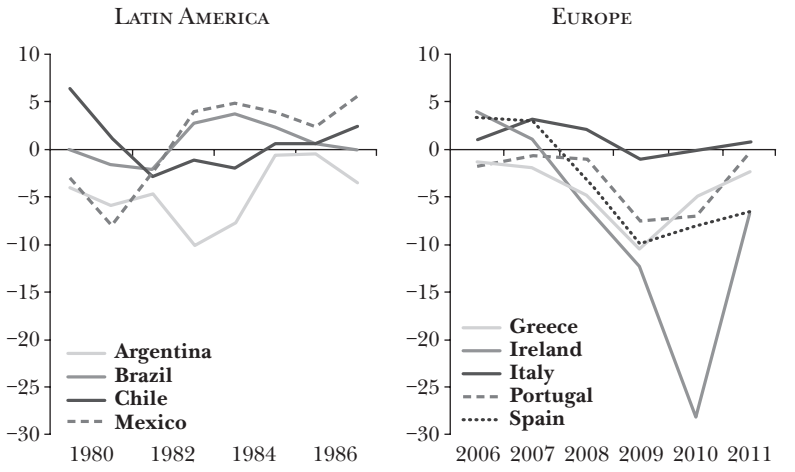
We believe that carrying out austerity measures may be much harder in the case of the peripheral European countries. This

is mainly due to the differences between the economic and institutional arrangements in the euro area, and the economic and political regimes in Latin American at the time. Foremost, in contrast to the Latin American case, being a member of the European Monetary Union implies having fewer policy instruments available. In effect, its members have individually fewer tools for their economies' to adjust to either domestic or external shocks.

The adoption of a common currency among these countries means that the conduct of monetary policy is in effect undertaken by a supranational institution, the European Central Bank (ECB). Although each country in the monetary union is represented in the ECB, the decisions are made jointly. Moreover, as mentioned, the introduction of a single currency, which only the ECB can mint, implies that these countries do not have an independent exchange rate policy. As a result, evidently,

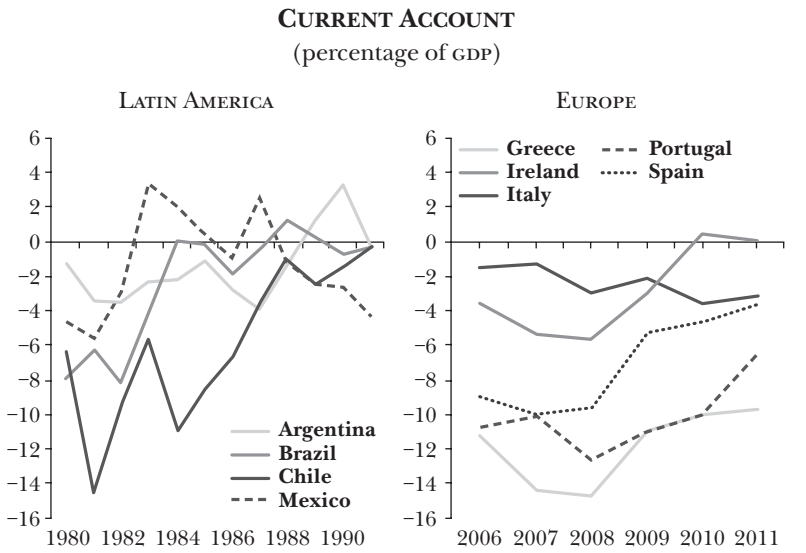
Figure 16

PRIMARY BALANCE
(percentage of GDP)



Sources: Easterly (1989); Banco de México, *The Mexican Economy,* 1996, and International Monetary Fund.

Figure 17



Source: International Monetary Fund.

member countries cannot individually resort to nominal devaluations to generate temporal real depreciations.

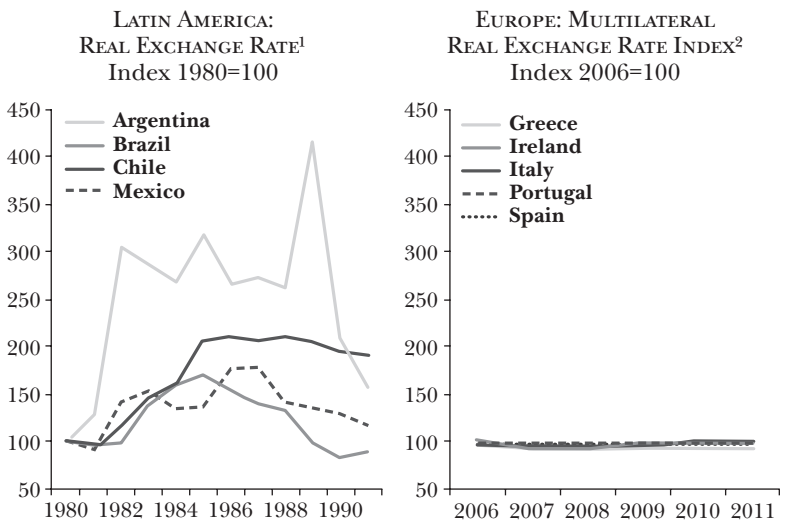
These factors, among others, have made it much more difficult to solve the crisis in Europe. In the Latin American debt crises, for example, the depreciation of real exchange rates provided a head start in terms of supporting economic activity and generating external surpluses in order to repay foreign debt obligations during the adjustment process. In addition, it acted as a risk-sharing mechanism for the adjustment's burden.

Countries in the euro area might choose jointly to devalue the euro. Nonetheless, real exchanges rates among these countries are fixed. In this respect, Figure 18 depicts the real exchange rate for some Latin American countries in the 1980s and for some euro area countries in the 2000s. Clearly, countries in the former group were able to generate considerable real depreciations, while countries in the latter group have not, and probably will not, be able to do so.

Even though achieving fiscal sustainability is necessary, in the absence of real depreciations that buffer the adverse impact on output, additional expenditure reducing policy actions, such as a more aggressive fiscal restraint, will probably lead to deeper downturns. A more severe recession makes improving a fiscal position and bringing down debt to GDP levels intricate tasks. Of course, this is exacerbated by the repercussion of the banks' situation in the public finances. The current situation for the highly indebted euro area countries illustrates the difficulties to properly adjust their fiscal accounts. All of this can be clearly appreciated in the appendix. There, it is shown that, under certain circumstances, after some time with very onerous costs of macroeconomic adjustment, it can be optimal for a government to default on its debt. Of course, since we

Figure 18

Real Exchange Rate



Sources: International Monetary Fund and BIS.
[1] The real exchange rate is defined as EP*/P, where P is the CPI of the country, E is the exchange rate in units of domestic currency per USA dollar, and P* is the US CPI. An increase in the index implies a real depreciation.
[2] An increment implies a depreciation.

are talking here about a monetary union and with many of its members mired in the crisis, the problems derived from one member defaulting on the incentives of the others can lead to an almost inextricable situation.

With regards to inflation, although no panacea by far, first, it can be the byproduct of various policies, for instance, a set of nominal devaluations. Second, it is part of the mechanisms that facilitates the adjustment. Third, it is a mechanism that redistributes the losses, and as such it can be thought as a risk-sharing device.

The adjustments that have taken place have already been draconian. Yet, the necessary adjustment is possibly much greater. In effect, the lack of an exchange rate policy, the low levels of productivity, and the unfavorable prospects of the global economy, mean that the brunt of the adjustment will have to rely on an even sharper contraction in domestic income and imports. It is difficult to think that this will be politically viable.

Full credibility has been absent in the euro area crisis. As mentioned, the magnitude of the sovereign debt crisis in the euro area, the lack of a comprehensive set of policy options, and the lag in the economic reforms to address the economic difficulties in Europe, have led to a deterioration in credibility. Consequently, the perceived risk of an extremely adverse event, such as a sovereign default episode with large disruptions in financial markets and economic activity, has been increasing.

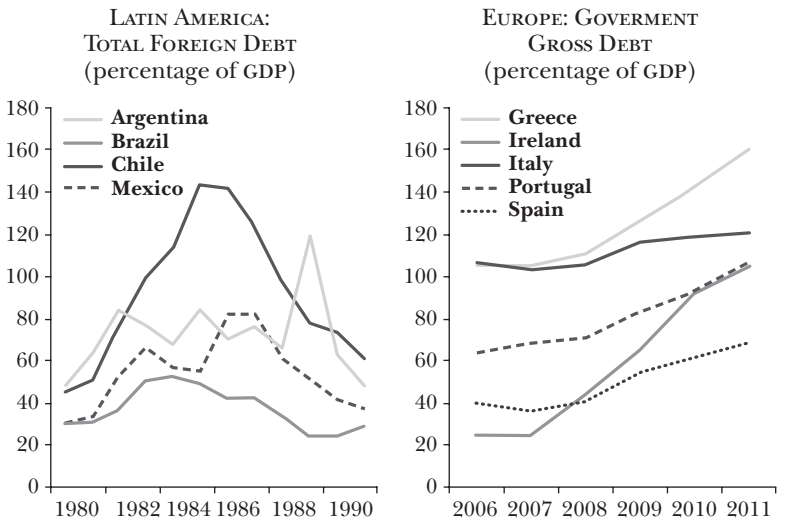
3.1.2 Stocks

Countries in the euro area periphery face large debt payments denominated in euros, a currency they do not mint, as mentioned. This is similar to Latin American countries in the 1980s which had debts denominated in USA dollars.[16] Moreover, in

[16] In principle, countries that have their own currency and issue government debt in that currency can resort to printing money with the direct consequence of an increase in inflation, to dilute the real value of their nominal debt. However, euro area countries

Figure 19

DEBT



Sources: World Bank, *World Debt Tables*, and International Monetary Fund.

many respects the magnitude of the euro area's current standoff is greater than that of Latin America in the eighties.

To appreciate this, Figure 19 shows the government gross debt as a fraction of their GDP, for Greece, Ireland, Italy, Portugal, and Spain. In all these countries, except for Spain, the public debt to GDP ratio has reached levels that exceed their GDPs. In contrast, during the Latin American debt crisis, Mexico and Brazil had a total external debt to GDP ratios, well below 100%. Argentina only registered a figure above this level for one year. Although Chile reached an external debt to GDP ratio of around 140% in the mid-1980s, it was able to significantly reduce this ratio by the second half of that decade (Figure 19).

Altogether, as in the Latin American crises at the time, the euro area is currently in a catch-22 situation. A weak economic

do not individually have the option of printing money to do so. In this aspect, public debt of euro area countries resembles the external debt of Latin American countries.

performance is not conducive to an improvement in fiscal positions. Fragile financial conditions are not supportive of economic growth. Fiscal positions might worsen if significant resources are needed for the financial sector. Moreover, there are institutional hurdles to delineate swifter changes in policy response. In turn, full credibility is lacking, which is conducive to lessen economic activity.

3.1.3 Additional Implications of the Economic Adjustment and Policy Response

In much of the discussions regarding the euro area crisis there is a central issue. The fact is that a lengthy and deep adjustment is already in place and, surely enough, one can only hope for the recovery. Nonetheless, the adjustment costs, mostly those associated to the stocks problem, have to eventually fall on some specific groups. Given that the euro area does not have much flexibility in terms of a set of mechanisms and policy tools that could help sharing in the adjustment's burden, the crux of the matter is which groups are going to sustain what part of the burden. This, to a great extent, depends on the type of adjustment agreed upon in the negotiation processes within the euro area.[17]

In this context, it is useful to think of the set of mechanisms and policies as a type of risk-sharing arrangement. A standard theoretical result in the literature is that under optimal risk-sharing, as a consequence of a macroeconomic shock, each individual reduces his or her consumption in equal proportion and, thus, analogously, any other group (e. g., see Kreps, 1990). For instance, a 10% reduction in a region's product, under an

[17] Seeing the same issue from another perspective, under the presence of several adjustment mechanisms the crisis' burden is shared among nominal variables, e.g., inflation, nominal component of the exchange rate, etc., and real variables, real exchange rate, consumption, investment, etc. Thus, given the reduced number of such mechanisms and policy tools the crisis' burden falls, for the most part, on real variables.

optimal risk-sharing scheme, leads to a 10% reduction in every individual's consumption.[18] In contrast, in most crises, as those that have been considered, a shock is asymmetrically shared. Furthermore, given the institutional arrangements and policy constraints in the euro area, we conjecture that the magnitude of such asymmetry in this case is significant. Moreover, in the euro area there is additional ambiguity regarding the adjustment's burden, given that its design –at the time– never contemplated certain contingencies, such as the possible renegotiation of nominal contracts.

3.2 Some Possible Courses of Action

We explore some possible courses of action to contribute to the adjustment process in euro area. Also, we discuss the main challenges associated with each of these courses. Not surprisingly, we find that many of the channels through which the euro area could and should be adjusting are either turned off or simply not working. We then go on to suggest what we believe are two crucial elements still lacking for the crisis to dissipate.

In this context, first, even if an economy within a monetary union does not have, for instance, an exchange rate policy at its disposal, it could –at least in principle– adjust to shocks by means of either labor mobility or changes in the real wage (Mundell, 1961).

Nevertheless, several subtle factors are in effect limiting labor mobility. Basically, even though there are no legal barriers to workers' migration within the euro area, it is well known that cultural factors such as language differences play a role diminishing labor mobility. These factors have inhibited the economies' adjustment through this channel.

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[18] This refers to an arrangement made ex ante. An issue is that some of the contingencies currently taking place were never considered. As such, even equally sharing the adjustment is optimal, enforcing such an arrangement ex post is inherently difficult for the obvious reasons.

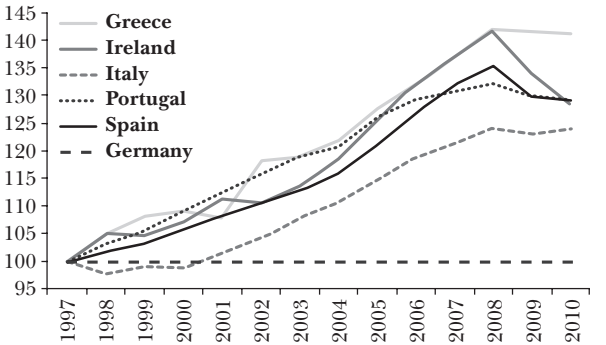
As we know, Greece, Ireland, Italy, Portugal, and Spain's unit labor costs increased substantially since the late 1990s (Figure 20). This implied a sharp loss in competitiveness for these countries, which needs to be corrected if we are to expect an improvement in economic growth potential. Moreover, labor market rigidities in Europe significantly limit nominal wage downward flexibility, reducing the effectiveness of changes in nominal wages to reduce wages in real terms and, thus, decrease unit labor costs (Krugman, 2011).

Devaluating the nominal exchange rate and generating inflation was used to cut real wages in Latin America. This was the alternative given nominal wage downward rigidity. Nonetheless, as mentioned, this is not possible within a monetary union and, jointly, it is very probable that a subset of countries within the Union would find such policies unacceptable. Thus, the reduction of labor costs is fairly difficult for Europe.

Second, an internal devaluation is a potential alternative to improve competitiveness. In such case, the euro area member's real exchange rate adjustments would need to be carried out by means of a change in the general level of domestic prices.

Figure 20

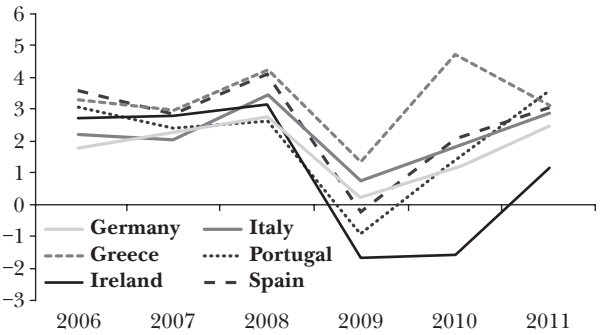
UNIT LABOR COSTS: GERMANY VS. SELECTED ECONOMIES
Index 1997=100



Source: Annual macro-economic database of the European Commission.

Figure 21

HEADLINE INFLATION
(annual percent change)



Source: International Monetary Fund.

That is, a real depreciation would require having a domestic inflation rate lower than the one prevailing abroad.

Having said that, consider the inflation rates in Germany and in peripheral countries (Figure 21). In general, they are all below three percent. Thus, in light of the low inflation rates prevailing in zone, a real depreciation would possible entail a deflationary episode.

Moreover, deflations are commonly associated with a markedly weak demand, and consequently usually take place in the context of large economic recessions (Bernanke, 2002). Under these circumstances, a period of falling prices in the highly indebted euro area countries would probably require a further contraction of aggregate demand, which would entail a more severe fall in output, with even higher social costs in terms of unemployment and reduced standards of living. Also, having a deflation would go directly against the dilution mechanism for the nominal denominated government debt. In addition, deflation would imply a brutal redistribution from debtors to creditors, precisely when most of the affected economies have an over indebtedness problem. Furthermore, if several countries would equally follow this

strategy, the consequences could be very adverse for overall growth in the euro area and beyond. In all, an internal devaluation is not likely to be feasible, neither at an individual nor at the Union level.

Third, based on the Latin America experience, growth enhancing policies are essential for solving debt crises. Thus, the implementation of comprehensive structural reforms to increase productivity and enhance competitiveness is an imperative for the euro area. In order to establish a balanced economic growth path, to achieve sustainable fiscal policy paths, and to be able to reduce debt to GDP ratios, one can strongly argue that euro area countries should focus on structural reforms. This, indeed, has been the case. In fact, one can hardly overemphasize the importance of these reforms since in a monetary union, without the possibility of nominal devaluations, improving competitiveness is a very important element.

Designing and adopting these reforms takes time and, above all, political consensus. A number of countries have begun to adopt measures to increase the flexibility of their rigid labor markets, but progress has been slow. Furthermore, once the structural reforms have been enacted and adopted, in many cases their beneficial effects will take time to fully materialize and have an effect on the economy. In Latin American countries, as mentioned, structural reforms were part of the strategy to exit the debt crisis in the 1980s. However, before such reforms were implemented, the depreciation of the real exchange rate, and the decline in real wages had already contributed to a rise in net exports and, accordingly, supported economic activity.

Moreover, currently the problem can be seen as one of insufficient demand, due to the corrections in the economic agents' balances that have taken and still need to take place. In the short run, the structural reforms, leading to an improvement in supply, can even exacerbate the short run imbalance between aggregate supply and demand.

In sum, being a member of a monetary union takes away essential adjustment mechanisms, in particular, the exchange rate and, even though no panacea, inflation. This situation

puts most of the adjustment's burden on economic activity, income, and employment. It also implies higher economic and social costs. This is even without taking into account the dramatic problems arising from the negative feedback between the public finances and the banking sector, which can increase the size of the problem manyfold. The expenditure-reducing measures implemented have already led to significant social unrest. If this continues, it is not difficult to think of situations such as the one modeled in the appendix, where it is optimal for a government to default. A worst case scenario would follow.

3.3 Financial Assistance to Debtor Countries

The peripheral countries are undergoing a draconian adjustment. As large as the former is, so far, on average, it is clearly smaller than in the Latin American case whence in this case the accumulated disequilibria was smaller. What is more, in the European case, as has been discussed, there are no important price mechanisms that could make the adjustment relatively less costly and quicker, plus the fact that the region has to contend with the banking crisis, which is potentiating the problem. Under these circumstances, the case for substantial financial assistance and debt forgiveness is certainly a strong one. Recall that the case of Latin America in the 1980s strongly suggests that debt relief is a crucial element for exiting debt crises. But as mentioned, in this case a strong commitment signal is proposed to account for moral hazard problems that would arise.

More concretely, this commitment signal would entail the reduction of both the fiscal and the current account deficits to zero. We believe this would be beneficial for the following reasons. First, it would allow the recipient country to signal to the financial markets its level of commitment and seriousness of purpose, thus weeding out those potential countries that are not serious enough about their pledge. In particular, taking both balances to zero signals that, at least in terms of flows, the economies doing the adjustments have done so consistent with zero net outside financing, in effect, having fully

adjusted flows in the economy to reflect this. Second, it would bring assurance to those institutitions and countries providing the debt relief resources to the recipient country. In sum, given the reduction in asymmetric information, it would alleviate the moral hazard that would arise if the debt relief is provided unconditionally.

The severe debt crisis in Europe threatens financial stability in the region and beyond. In this setting, European authorities, along with the IMF, have adopted measures to provide financial support to debtor countries. However, European authorities, in general, have not yet considered debt reduction for highly indebted euro area countries. The exception is the haircuts accepted by private bondholders of Greek sovereign debt in the first half of 2012. In what follows, we briefly discuss the main measures that have been taken to provide financial support.

In terms of financial support to countries in trouble, the response of the European Union has been the creation of new lending facilities, which can provide financial assistance to governments and financial institutions in the euro area. Currently, the main facility in operation is the European Financial Stability Facility (EFSF). This facility was established in May 2010 with the remit of issuing bonds to raise funds and, in turn, assist euro area members in financial difficulties.[19] It is expected to be replaced by a permanent one, namely, the European Stability Mechanism (ESM) in 2013. During 2012 the EFSF and ESM have coexisted. Up to this point, they have a joint overall lending capacity of 700 billion euros.

Hitherto, four countries have received financial assistance from the European Union in conjunction with the IMF, namely, Greece, Ireland, Portugal and, more recently, Spain. In

[19] The bonds issued by the EFSF are guaranteed by euro area members according to their share in the capital contribution to the ECB. The EFSF can use the funds raised to provide financial support to euro area governments, to purchase government bonds in the secondary market, and to finance the recapitalization of banks.

general, financial support has been subject to the implementation of fiscal consolidation packages. The perception is that these have not succeeded in correcting what in fact are large fiscal deficits in these countries.

The first country that received financial support was Greece in May 2010.[20] In addition, the EFSF and the IMF have provided financial assistance to Ireland and Portugal. The rescue program for Ireland was agreed in December 2010, and the one for Portugal in May 2011.

Subsequently, given the fiscal and financial problems in Greece, a second financial assistance program was announced in July 2011, which was subject to negotiations and was revised in early 2012. The Greek government negotiated haircuts on Greek bonds with private creditors. In this setting, the second rescue plan combined financial assistance from the European Union and IMF with debt relief. The stated goal was to reduce its debt to GDP ratio to 120% by 2020. That is, in spite of the debt reduction, public debt will remain above 100% of their GDP.

Yet, it seems to be the case that these measures may not be sufficient to bring down public debt to long-run sustainable levels. Up to this point, European authorities have not considered debt relief for other countries in the euro area. Finally, authorities agreed to provide financial support to Spain in June 2012, mainly to recapitalize its domestic banking system.

In spite of these efforts, we consider that two things are still missing: first, backstops of much more considerable magnitude, which in themselves go in the direction of having much better risk sharing; and, second, outright debt forgiveness. Both are interrelated and can take many forms: mutualizing debt, monetizing debt, etc. The point is that given the magnitude of the crisis, and the absence of mechanisms, to solve both the individual countries' flows and stocks problems, it is very difficult to think that countries will not reach a point where

[20] This program was established before the creation of the EFSF. Thus, the financial support to Greece took the form of bilateral loans from other governments.

it will be individually optimal for them to default on their obligations. Time is of the essence. We believe that the needed adjustments in these countries are far from being completed, all the more so if considering the negative feedback coming from the problems in their financial sectors. Without any of the solutions so far put forth making growth for these countries feasible, we think that the euro area is heading for a worst case scenario. Clearly, debt forgiveness can have very adverse consequences in terms of moral hazard. However, debt relief mechanisms, as the one we propose, can be designed to attenuate these problems and, furthermore, we believe that the alternative of not putting direct debt relief on the table would be far more onerous.

4. CONCLUSION

We analyze the experience of Latin American external debt crises, in particular the one in the 1980s, with the aim of shedding some light on the current debt crisis in Europe. Both episodes involve a period of overspending, access to abundant financing from international markets, and a sharp rise in debt denominated in a currency that debtor governments do not mint. All of this, accompanied by serious problems with financial sector regulation and supervision, has resulted in an unprecedented crisis. The macroeconomic mismanagement has led to a debt crisis that has threatened not only the affected countries' economies, but the international financial system as well.

The response to the Latin American debt crisis included macroeconomic stabilization programs, structural reforms, and a debt renegotiation process that clearly reduced debt burdens. All elements are essential, and for them to be so, must be credible. Indeed, this experience highlights a number of important issues. To begin with, a solution to a debt crisis requires correcting the macroeconomic imbalances that led to the crisis in the first place. Second, real exchange rate depreciations provided an invaluable head start in the adjustment process. Third, in the absence of economic growth,

adjustment plans will probably be far from sufficient to solve a debt crisis. Fourth, inflation, although with very high costs, is usually the only mechanism a country has to absorb losses, to adjust in a quicker and more effective way the public finances and domestic expenditures in general, and to reduce the real value of debts. If inflation is to be avoided, then certainly, backstops and debt relief take on even more urgency to be part of the solution. Finally, and needless to say, to be effective, these measures must be designed and implemented in a credible way.

The current situation in the euro area is in many dimensions worse than the one of Latin America in the 1980s. First, the macroeconomic imbalances and debt levels' magnitudes in peripheral European countries are larger than those in Latin America at the time. Second, within a monetary union, members have a much reduced number of policy tools at their disposal to adjust their economies. In contrast to Latin American countries in the 1980s, highly indebted countries in the euro area, for instance, cannot rely on nominal devaluations to generate real depreciations. Third, although unpleasant, they cannot count on monetarist arithmetic to advance in the loss absorption process.

In this setting, the adjustment's burden, for the most part, will fall on expenditure reducing measures. Yet, austerity measures without real depreciations, involve a very costly adjustment process with even higher economic and social costs than otherwise. Unfortunately, cultural barriers to labor mobility and downward nominal wages rigidity prevent an adjustment through migration and lower real wages, respectively. Moreover, the contractionary effects of a deflationary process make an internal devaluation unfeasible. In this context, it is crucial to increase productivity and competitiveness by adopting key structural reforms. Nonetheless, even if these reforms are quickly enacted and implemented, it will take time to see a real impact in the economy.

The issues considered above, along with the magnitude of fiscal and financial problems in the euro area, tend to undermine

the credibility of policy actions and reforms announced by domestic governments and European and multilateral authorities. In this scenario, there is a risk that a catastrophic event, such as a sovereign default episode with negative consequences for economic activity and financial stability may occur.

As a result, we believe that not only should there be further progress in strengthening the region's backstops, but there probably should also be some outright debt forgiveness. Of course, one should be aware of possible moral hazard implications that this policy might create into the future. However, not doing so will probably result in an even worse outcome. To deal with the moral hazard issue, we have proposed a scheme in which the recipient country would achieve fiscal and current account balances equal to zero as a commitment signal.

In the appendix, we develop a model of sovereign debt and default, which illustrates the trade-offs that highly indebted countries face. On the one hand, they can default. In such a case they would stop transferring resources to their creditors and, accordingly, can afford higher levels of domestic expenditures. However, they would be excluded from international markets and face an additional output loss. On the other, countries can continue honoring their debt obligations, which implies the adoption of additional austerity measures, further contracting domestic expenditures and, consequently, their inhabitants' standard of living. The model shows that a severe output contraction and sufficiently high levels of debt can trigger a default episode.

Appendix

We consider a sovereign default model for a small open economy, which can qualitatively illustrate the dynamics of the economy during the gestation of macroeconomic imbalances and the adjustment period. First, the model is described, and then a numerical exercise is presented.

The Model

There are three agents in this model: households, the government and foreign lenders. Households' utility depends on private consumption and public spending. Each period, they receive an endowment of goods and consume, taking as given the actions of the government. The benevolent government seeks to maximize households' utility. It can borrow from international credit markets, taxes households, and finances public spending. A one period non-contingent bond is available to the government. This is the only asset traded in international financial markets. The government is the only domestic agent that is able to borrow and lend. Debt contracts are not strictly enforceable since the government has the option to default on them. When it defaults, the economy experiences an output contraction and it is temporarily excluded from financial markets. Foreign lenders charge a premium to account for the probability of not being paid back by the government. The risk premium depends positively on the level of debt and negatively on output.

During economic expansions and with relatively low levels of debt, external financing is cheap. In these conditions, the government borrows from abroad in order to finance higher public expenditures. Then, when the economic expansion ends and output begins to fall, foreign lenders charge an increasing risk premium. In a context of a lesser access to external borrowing, the government faces the challenge to repay the contracted debt, which requires an adjustment program. In particular, it is necessary to generate a fiscal surplus. However, given the size of the debt level and the output contraction, the repayment of the debt obligations may be extremely costly, which may trigger a sovereign default episode.

Households

There is a representative household with preferences given by the present value of the streams of utilities in each period:

$$E_0 \sum_{t=0}^{\infty} \beta^t U\left(C_t, G_t\right) \cdot$$

The per-period utility is concave, strictly increasing, and twice differentiable. The discount factor is $\beta \in (0, 1)$ and households derive utility from private consumption and public expenditures. Let C_t represent private consumption, and G_t public spending. Households receive an endowment of goods, which is subject to shocks. In particular, y_t represents households' income, that is assumed to follow a Markov process, with $Q(y_{t+1}|y_t)$ denoting the Markovian transition function for *y*, which has values defined over the set Υ. Output can be divided between private and public consumption.

The government taxes income and has two instruments to finance its expenditures: the proceedings from taxation and external borrowing. The representative household takes public expenditures and taxation as given and consumes according to the following expression:

$$C_t = \left(1 - T_t\right) y_t \,,$$

where T is the tax rate on income.

The Government

The government maximizes households' utility and can borrow and lend in international financial markets, which are incomplete because the government only saves and indebts itself by selling and buying a non-contingent one period bond. In order to finance public spending, the government can borrow from abroad and taxes households through an income tax.

Each period, conditional on being in good credit standing the government chooses between paying the outstanding foreign debt or defaulting on it. This decision comes from comparing the net benefits between these two options. The government compares the cost of repayment given by the short-run disutility of reducing current consumption to repay the non-contingent

loan, against the cost of temporary exclusion from international financial markets given by the foregone benefits of consumption smoothing and the output loss in autarky.

The inter-temporal problem of the government can be expressed in a recursive dynamic programming form. Conditional on having access to financial markets, the government has to decide whether to default or not. If default is not optimal then it has to decide how much borrowing or saving to do and it has to make two fiscal policy decisions, i. e., the amount of public spending, and the level of the tax rate. If default is optimal then the government only has to decide its fiscal policy. All these decisions are made given the output shock and the amount of outstanding foreign assets it has. Thus, the state variables are the level of output *y*, the level of foreign assets B (debt corresponds to negative values of B), and the credit situation of the country, d, where $d = 1$ if the country has access to credit markets and is zero if it is in financial autarky.

The value function when the government has access to credit markets and begins the period with an amount of assets B and output y is given by $V_0(B,y)$. The government has to decide between honoring its debt or defaulting on it, It does so by comparing the value associated with not defaulting $V^c(B,y)$, with the value corresponding to default $V^d(y)$. The problem can be expressed in the following way:

$$V_0(B,y) = max\left\{V^c(B,y), V^d(y)\right\},$$

and the optimal default decision of the government is characterized by:

$$D(B,y) = \begin{cases} 1 & if\ V^c > V^d \\ 0 & otherwise \end{cases}.$$

The default policies determine a repayment set $\Gamma(B)$; this is defined as the set of values of the output shock such that repayment is the optimal decision given the level of foreign assets B,

$$\Gamma(B) = \{y \in \gamma : D(B,y) = 1\}$$

and a default set F(B) defined as the set of values of the output shock such that default is optimal given asset holding level B,

$$\mathrm{F}(B) = \{y \in \gamma : D(B,y) = 0\}.$$

If the government does not default, it can issue new debt and finance public expenditures according to the following restriction:

$$G = Ty + B - q(B',y)B'$$

where q(B',y) is the price of the bond that pays one unit of consumption goods the following period if the government does not default on its debt. When the government borrows, it sells bonds to foreign lenders, so it receives q(B', y)B' units of consumption goods from foreign creditors on the current period and promises to pay B' units next period conditional on not defaulting.

When the government has access to credit markets it chooses the tax rate, public expenditures and foreign assets in order to maximize the utility of households, taking into account how the private sector will respond to these policies. Formally, the government maximizes utility subject to the households' budget constraint, as well as its own budget constraint.

Thus, the problem of the government when it has access to credit markets is:

$$V^c(B,y) = Max_{T,G,B'}\left\{U(C,G) + \beta\sum_{y'} V_0(B',y')Q(y'|y)\right\}$$

$$s.t.$$

$$G = Ty + B - q(B',y)B'$$

$$C = (1-T)y$$

When the government defaults on its debt the country is temporarily excluded from financial markets. In addition, the economy experiences an output loss. The output in autarky is represented by h(y), which is lower than *y*. The problem of the government is thus:

$$V^d(y) = Max_{T_d, G_d}\left\{U(C_d, G_d) + \beta\sum_{y'}\left[\mu Vo(0, y') + (1-\mu)V^d(y')\right]Q(y'/y)\right\}$$

s.t.

$$G_d = T_d h(y)$$

$$C_d = (1 - T_d)h(y)$$

where C_d represents consumption when the country is in autarky. The tax on income is the only instrument to finance public expenditures. When the government defaults, it is excluded from credit markets. However, in the next period it may return to financial markets with an exogenous probability μ. When it regains access to financial markets, it does so with no debt burden, B=0. In addition, with a probability 1−μ the economy will remain in financial autarky.

Foreign Lenders

There is a large number of identical, infinitely lived foreign lenders. Each creditor can lend or borrow at the risk free rate r_t and participates in a perfectly competitive market to lend to the government of the small open economy. Foreign creditors are risk neutral, have perfect information about the small open economy's endowment process, and maximize expected profits, which are given by the following equation:

$$\pi = -qB' + \frac{\lambda(B', y)}{1+rf}0 + \frac{\left(1-\lambda(B', y)\right)}{1+rf}B'.$$

The first term of the equation shows that when creditors lend to the government in the current period, they purchase the bond issued by the domestic government at a price *q*. In the

next period, lenders may receive the face value of the bond depending on whether the government defaults or not. When it defaults, creditors get 0 units of the consumption good, where $\lambda(B', y)$ is the endogenous probability that the government defaults on its debt obligations. Therefore, with probability $1-\lambda(B',y)$ lenders will receive the amount B'.

Since there is perfect competition in the credit market, a zero profit condition for the foreign creditor has to be satisfied. The bond price is then:

$$q = \frac{\left(1-\lambda\left(B', y\right)\right)}{1+rf}.$$

Thus, the equilibrium bond price $q(B',y)$ reflects the probability of default of the government, $\lambda(B',y)$, which results from

$$\lambda\left(B', y\right) = \sum_{y' \in F(B')} Q\left(y' | y\right).$$

Thus, the default probability is zero when $F(B')=\emptyset$ and it is one when $F(B')=\Upsilon$.

Numerical Exercise

In this section the model is solved numerically to illustrate the dynamics of the main macroeconomic variables. It is worth mentioning that up to now the quantitative models of sovereign default have not been able to generate interest rate spreads and support debt levels similar to those observed in the data. In this context, the aim of this section is to perform a numerical exercise to obtain some insights about the dynamics of the economy during a period where macroeconomic imbalances are built up and then when the economy has to adjust to a lesser access to external borrowing, rather than calibrate the model to a specific economy.

The following utility function is used in the numerical solution of the model:

$$U\left(x\left(C,G\right)\right)=\frac{\left(x\left(C,G\right)\right)^{1-\sigma}}{1-\sigma}\,.$$

where s is the risk aversion coefficient and x(.) is a Cobb-Douglass aggregator:

$$x\left(C,G\right)=C^{\alpha}G^{1-\alpha}\,.$$

Table 7 presents the values of the parameters used in the numerical exercise. They are similar to those used in the economic literature of sovereign default models (e. g., see Aguiar and Gopinath, 2006; Arellano, 2008). The model is solved numerically using a discrete-space method and a value function iteration algorithm.

Table 7

PARAMETER VALUES		
Risk aversion	σ	2.00
Discount factor	β	0.95
Consumption weight	α	0.70
Re-entry probability	μ	0.10
Output loss autarky	h	0.02
Output shock	ρy	0.90
	σy	0.02

Economy Dynamics

This section considers the policy functions of the model economy, and assumes a path of output shocks in order to analyze the dynamics of the small open economy during a period where macroeconomic imbalances are built up, and then during the adjustment period. Finally, the government decides to default on its debt obligations.

Initially the government has no debt, and the fiscal balance is equal to zero. In this setting, it is assumed that the economy faces a sequence of positive output shocks. The favorable economic performance, in a context where the government has no debt, implies an interest rate spread equal to zero. It is assumed that the economic expansion eventually ends and the economy starts to suffer a sequence of negative output shocks. In this scenario, foreign lenders demand a risk premium in order to lend to the government, and consequently the interest rate spread begins to increase. Figure 22 depicts both the output level and the interest rate spread for the model economy.

The government initially takes advantage of the low cost of external financing, and accordingly borrows from abroad in order to finance a relatively high level of public spending. The government mostly relies on external borrowing to finance public expenditures rather than on taxes, which allows households to consume more. In this scenario, domestic absorption, which in this model corresponds to public spending plus private consumption, increases with respect to output. Figure 23 depicts the output and absorption levels for this economy, and shows the excess of domestic absorption over output during the economic expansion. At the same time, the government

Figure 22

GDP VS. SPREAD

GDP Index (period 1 = 100), spread in percent

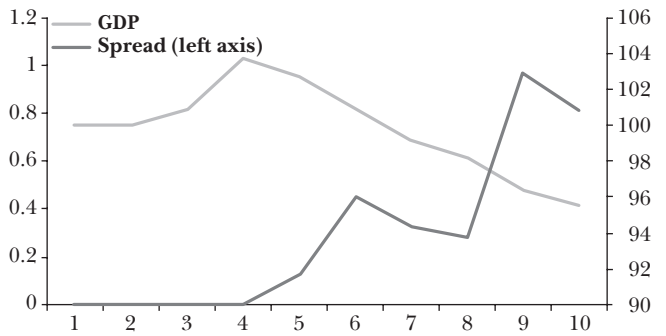
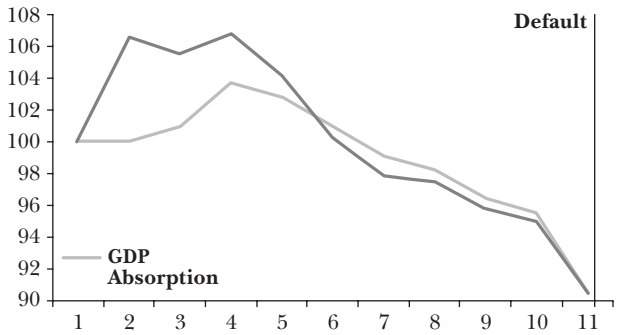


Figure 23

GDP vs. Absorption

Index (period 1 = 100)



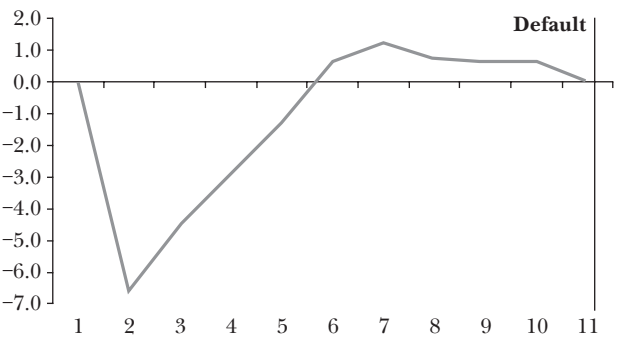
runs a fiscal deficit and accumulates debt. Figure 24 and Figure 25 depict the fiscal balance and the sovereign debt level, respectively.

Up to now, it can be argued that the dynamics of the small open economy qualitatively resembles the behavior of several Latin American countries during the 1970s and early 1980s,

Figure 24

Fiscal Balance

(percent of GDP)



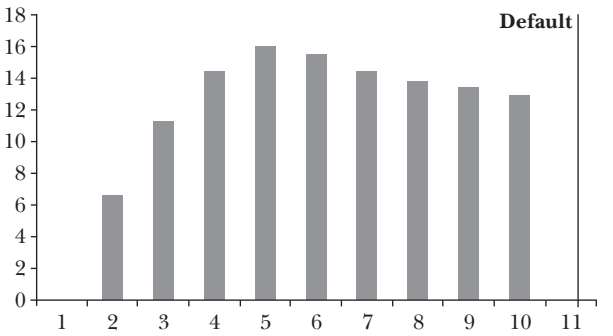
and some euro area countries, such as Greece, during part of the 2000s.

When the economic expansion ends and interest rates increase, the small open economy has to go through an adjustment process. In the model the output contraction that triggers the need to adjust the domestic economy to an adverse external environment is exogenous. In the context of the Latin American debt crisis during the 1980s, we could think of the output contraction as corresponding to the economic recession in advanced economies at the beginning of that decade. In the case of the euro area, it could correspond to the global downturn associated with the global financial crisis.

The lesser access to international financial markets diminishes the government's capacity to refinance the contracted debt in the model. In this scenario, the government reduces public spending and increases the tax rates in order to improve fiscal accounts and honor its external debt obligations. As can been seen in Figure 25, it runs a fiscal surplus. At the same time, the economy as a whole has to contract domestic absorption below output in order to be able to repay the outstanding debt. The fiscal measures implemented by the government induce this adjustment. On the one hand, private consumption declines

Figure 25

DEBT TO GDP RATIO
(percentage)



because of higher taxes. On the other, the government directly reduces public expenditures. In this context, the level of debt begins to fall. However, in spite of the latter, the sharp output contraction makes the repayment of debt obligations extremely costly. As a result, a sovereign default episode takes place. In this way, this stylized model illustrates qualitatively the dynamics of the small open economy from the initial development of macroeconomic imbalances to the default decision made by the government.

In the case of the Latin American debt crisis, it can be argued that a number of factors contributed to avoid the default that takes places in the model. First, the adjustment in the real exchange rate contributed to moderate the output contraction. Second, the adoption of structural reforms supported economic activity. Third, the debt relief Latin American countries got through the Brady Plan reduced their debt burden. Thus, the model suggests that in the absent of comprehensive policy actions that boost economic activity and reduce the debt burden, a sovereign default episode can potentially occur.

Finally, we would like to underscore some additional issues. First, as argued, the macroeconomic imbalances are created by having an excess of expenditure over income. In practice, an excess of expenditures and, thus, in indebtedness could be due to the public or the private sector. Nonetheless, in a crisis, typically it is the public sector that assumes the debts of the private sector. Thus, the model abstracts from private debt and assumes that all debt is generated by the government.

Second, when it comes to debt payment, regardless of which sector –public or private– caused the debt, households (tax payers) end up paying it. Essentially, although the government contracted the debt, it is effectively paid by the households through taxes. In the model, this is captured setting a tax on the household's endowment of tradable goods.

Third, if the financing costs increase, the economy has to reduce the excess of expenditures over income, i. e., the flows problem. To this end, a fiscal adjustment is implemented. Likewise, higher taxes lead to a lower (net of tax) endowment

available to the households, leading to lower consumption. Thus, reflecting this, in the model an adjustment in the public accounts leads to an adjustment in private consumption, as documented in the previous sections.

Fourth, inflation was a common component of the adjustment process. However, the model does not have money. Accordingly, there is no inflation and all variables are real. Yet, in the model two of the main adjustments mechanisms are lower public expenditures and higher taxes. Inflation can be interpreted as a tax on the households' monetary holdings. Clearly, the reduction in purchase parity leads to a lower consumption. Thus, albeit abstracting from some elements, the tax in the model can account for the inflationary tax.

Fifth, the general adjustment also has to consider the stocks problem, by leading the debts to sustainable levels. This requires a major fiscal adjustment which implies higher taxes and lower public expenditures. The latter are valued by the households. Given that the adjustment in the model takes place in bad times, i. e., a recession, the cost for the households can be significant. In fact, at some point there can be no solution. Under this circumstance, the government can opt for default.

Indeed, given the magnitude of the imbalances, the adverse feedback loop between the banking sector problems and the public finances, the lack of macroeconomic adjustment price mechanisms, and the very complicated political economy of distributing losses between members of a monetary union, the growth outlook looks dire enough for a default by some individual country to be a distinct possibility in the euro area. Of course, this would possibly lead to a systemic event. On the other hand, in the case of Latin America, structural reforms and the Brady Plan not only permitted exiting the crisis, but most probably also contributed to avoid a catastrophic event. Also, as argued, there were other factors present in the Latin American case during the 1980s, such as the absence of a banking crisis and the fact that the original imbalances' magnitudes were smaller than in the euro area case.

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