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# Less volatile growth? The role of regional financial institutions

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**T**he volatility of economic growth in the countries of Latin America and the Caribbean has been exacerbated by a lack of suitable instruments for smoothing external shocks. Difficulties with the provision of emergency financing and the development of financial markets capable of trading government securities that incorporate better contingency mechanisms have contributed to economic volatility. To identify routes towards progress with these two issues in the Latin American context, the present article examines the role that could be played by regional and subregional financial institutions, always bearing in mind that while these can supplement global institutions, they cannot supplant them.

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# I

## Introduction

Since the Asian crisis of 1997, it has been more widely recognized that the volatility of international financial markets is an important factor in the business cycles of emerging economies, as it creates new disequilibria in domestic economies and magnifies existing ones. The countries of Latin America have been no exception, since the shocks caused by volatility in external financial markets have been one of the main causes of growth volatility. Thus, the impact that natural resource prices have had for decades on the region's business cycle has now been compounded by international financial markets. Although natural resource prices have once again been making a large contribution to Latin America's economic boom in recent years, a longer-term view shows that capital movements are the factor that has most influenced economic cycles over the last three decades.

The financial volatility of the region's countries has been exacerbated by the lack of suitable mechanisms for providing emergency financing to countries experiencing balance-of-payments financing problems as a result of external shocks. The lack of an emergency financing network at the regional and international level has led countries to move towards a policy of self-insurance consisting essentially in the accumulation of international reserves, which is very far from being the most efficient option for protecting against the vagaries of the world economy. In recent years there has been a flurry of proposals for reforming world financial institutions and markets. However, the strategies developed to improve global financial arrangements have underplayed the potential role of regional financial institutions.

With a view to identifying more efficient ways of coping with external shocks in the Latin American context, this article discusses the role that could be played by regional financial institutions, without forgetting that these need to be seen as supplementing global institutions rather than replacing them.

In relation to such institutions, the primary focus of this article is on the potential for extending the geographical coverage of the Latin American Reserve Fund (FLAR). It then goes on to discuss the need to stimulate the development of financial markets for government securities with characteristics that make contingencies easier to cope with.

The ability of a reserve pool to cushion the impact of external shocks depends on the "insureds" not all being affected by these simultaneously. At first sight, a correlation analysis of such shocks in 10 Latin American economies indicates that, indeed, the countries are not thus affected and that it would accordingly be possible to extend the regional coverage of the Latin American Reserve Fund. The correlation ratios for detrended series of international reserves tend to be low or non-significant, terms-of-trade correlations do not show a clear pattern either, and private capital inflows present correlations that are positive but generally not close to unity. In addition, a regional fund could help to curb mechanisms of crisis transmission between countries, thereby reducing the correlation between them.

By joining a reserve pool, countries benefit from access to a larger volume of reserves and, depending on the individual case, a possible reduction in the volatility of these. The estimated coverage ratio, which combines both effects, suggests that countries whose reserves have low volatility in relation to their size would have few incentives to join a reserve pool. Of the 10 countries examined in this paper, those with the lowest reserve volatility, Chile and Colombia, would be reducing their levels of coverage by joining a reserve pool because both would have lower effective reserves than if they self-insured, resulting in incentive problems.

Moves towards regional financial development involving the issuance on international markets of government securities incorporating better contingency mechanisms, such as bonds indexed to gross domestic product (GDP), bonds indexed to commodity prices and local currency-denominated government bonds indexed to domestic inflation, have been hindered by coordination problems, lack of credibility and failures of transparency and surveillance. For progress to be made in this area, it is proposed that subregional development banks and the Latin American Reserve

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Fund should join the Inter-American Development Bank and the World Bank in their efforts to stimulate these markets.

Lastly, further financial integration will require greater macroeconomic coordination. Progress by the Latin American countries in this area, which has been very limited, could be stimulated by soft forms

of coordination that do not pursue the most ambitious goals but recognize that the process had to be gradual. Information-sharing and the creation of supranational forums for policy debate seem to be a good starting point. Over time, strengthening coordination would involve setting convergence targets for a set of macroeconomic variables.

## II

### Growth volatility

Despite the region's improved growth rate over recent years, the longer-term picture is discouraging. In the 1980-2006 period, the growth rate was low (2.4% a year on average) in relation both to the region's own past and to the behaviour of other developing countries (table 1). As well as being low, growth rates have been extremely volatile. Indeed, real volatility in the region has increased substantially since the 1980s and is, on average, more than twice as high as in the rest of the developing world (figure 1). Higher volatility has exacerbated uncertainty and adversely affected saving and investment decisions, and the resultant negative effects on the growth rate have hit lower-income sectors hardest (ECLAC, 2000 and 2004).

The factors behind the increased volatility of growth in the region are both internal and external. Internal factors include procyclical macroeconomic policies, low saving and investment rates and shallow financial markets.

TABLE 1

**Annual growth rates, selected periods**  
(Average annual rates)

	Developed economies	Developing countries	Latin America (19 countries)
1980-1990	3.1	3.3	1.1
1990-2006	2.4	4.8	2.9
1980-2006	2.6	4.3	2.4

Source: ECLAC.

In particular, financial markets in most of the region's countries are still oriented towards the short term and focused essentially on banking operations,

while capital markets are very underdeveloped. In addition, they are still highly dollarized and credit rationing and high real interest rates are widely encountered. Consequently, the expansion of financial activities has not translated into the development of financial intermediation instruments that could help to increase liquidity and mitigate the fluctuations of economic activity. The result has been that financial markets have tended to accentuate economic cycles (figure 2).

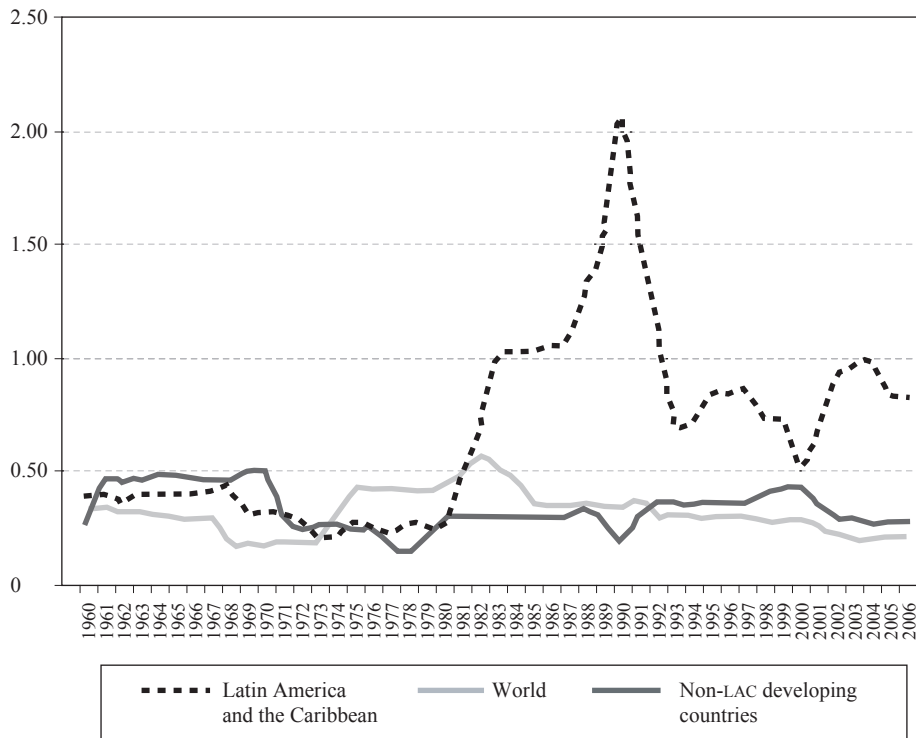
As well as being a response to domestic factors, GDP volatility has been closely associated with external shocks (Ffrench-Davis, 2005; ECLAC, 2000, 2001 and 2004).

Throughout much of the region's history, these shocks were associated with variations in the terms of trade. In recent decades, however, the volatility of financial markets has replaced commodity price movements as the main source of external shocks, a tendency that became more pronounced during the 1990s. This was due to two concurrent factors: an increase in the size and volatility of capital flows and a reduction in the volatility of the terms of trade, the latter being associated with the diversification of exports in most of the region's countries (ECLAC, 2004; López-Monti, 2005). Consequently, although the terms of trade have played a central role in Latin America's economic recovery in recent years, over the last three decades it is capital movements that have been the main external factor in the region's volatility (figure 3).

The impact of capital movements on growth volatility is not something peculiar to Latin America. The fact is that volatility and contagion were among the main characteristics of the rapid expansion of worldwide financial flows in the 1990s, channelled through the

FIGURE 1

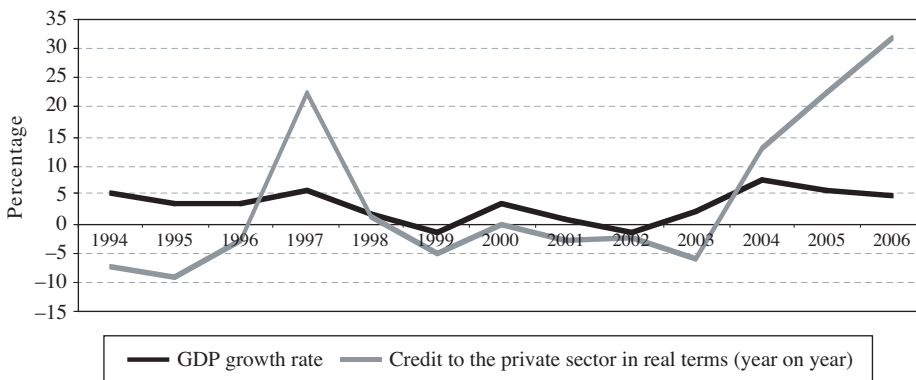
**Latin America and the Caribbean, world, and developing countries:  
Volatility of growth rates**  
*(Coefficients of variation, 10-year moving averages)*



Source: ECLAC.

FIGURE 2

**Latin America (seven countries): Credit to the private sector and economic activity**  
*(Average for seven countries of Latin America)<sup>a</sup>*

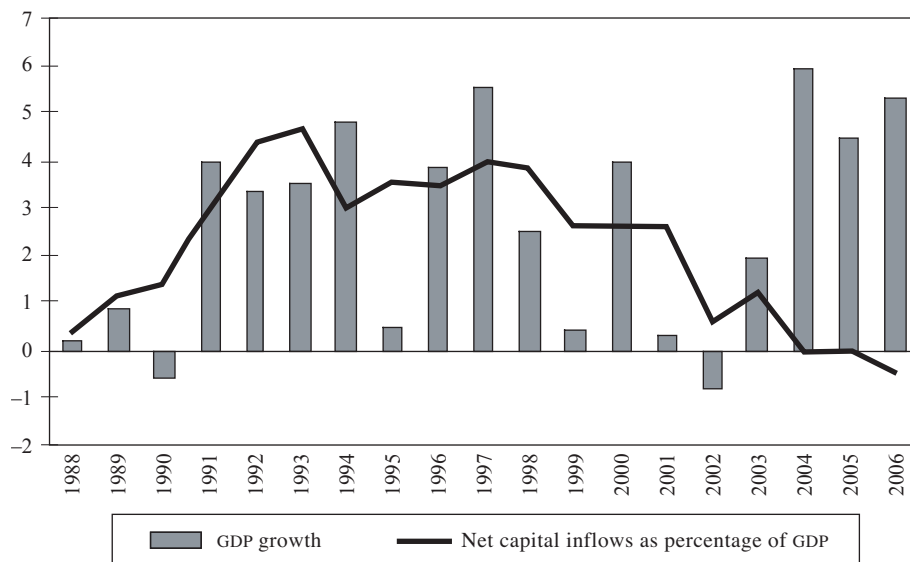


Source: ECLAC and IMF (various years).

<sup>a</sup> The seven countries are Argentina, Brazil, Chile, Colombia, Mexico, Peru and the Bolivarian Republic of Venezuela.

FIGURE 3

## Latin America and the Caribbean: GDP growth and financial flows



Source: ECLAC.

TABLE 2

Latin America and the Caribbean: External financing sources, 1990-2006<sup>a</sup>  
(Percentages of GDP)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
A. Debt	0.7	1.4	2.9	2.7	0.7	2.1	0.9	0.7	1.4	-1.1	-0.9	-0.3	-1.2	-0.6	-2.0	-2.3	-1.7
Loans <sup>b</sup>	-0.1	0.6	0.9	-1.2	-2.2	2.3	-0.7	0.0	-0.1	-1.9	-0.9	-0.2	-0.6	-0.4	-1.5	-2.4	-1.7
Bonds	0.8	0.8	2.0	3.9	2.9	-0.1	1.5	0.8	1.5	0.8	0.0	0.0	-0.5	-0.2	-0.5	0.1	0.0
B. Investment	0.8	1.6	1.6	2.3	2.6	1.8	2.8	3.5	2.9	4.1	3.4	3.4	2.8	2.1	2.1	2.4	1.2
Direct	0.6	1.0	1.0	0.8	1.5	1.5	2.2	2.9	3.1	4.6	3.6	3.4	2.7	2.0	2.2	2.1	1.2
Equity	0.2	0.6	0.6	1.6	1.1	0.3	0.6	0.6	-0.2	-0.5	-0.2	0.0	0.1	0.1	-0.1	0.4	0.0
C. Other <sup>b</sup>	-0.1	0.1	0.0	-0.2	-0.4	-0.3	-0.1	-0.2	-0.4	-0.2	0.2	-0.4	0.8	-0.3	-0.1	-0.1	0.0
D. Worker remittances	1.0	1.0	1.1	0.9	0.9	1.0	0.9	0.9	1.0	1.2	1.2	1.5	1.9	2.1	2.2	2.2	2.1
Total capital inflows plus remittances (A+B+C+D)	2.4	4.0	5.6	5.8	3.9	4.7	4.5	4.9	4.9	4.0	4.0	4.2	2.7	3.3	2.2	2.2	1.6
Total capital inflows (A+B+C)	1.5	3.0	4.5	4.8	3.0	3.7	3.6	4.0	3.9	2.8	2.8	2.7	0.8	1.2	0.0	0.0	-0.5

Source: ECLAC, with information from the IMF.

<sup>a</sup> Calculated on the basis of gdp in current dollars. The 2006 data are preliminary estimates.

<sup>b</sup> Includes the capital account plus errors and omissions.

banking system and through the bond, share and financial derivatives markets. Despite macroeconomic and institutional reforms in the Latin American countries and internationally, these phenomena have persisted and capital flows into Latin America and other developing regions remain volatile (Ocampo and Martin, 2003; Caballero, Cowan and Kearns, 2004).

### III

## Responses to external vulnerability

Everything suggests that the region will remain exposed to external shocks, whether these derive from variations in the terms of trade or fluctuations in capital movements. This is why the countries have sought to reduce their vulnerability to such potential shocks.

In effect, greater fiscal discipline and a regionwide current-account surplus have positively affected all indicators relating to short-term liquidity needs. These include the ratios between short-term external debt and international reserves, between external debt and exports<sup>2</sup> and between public debt and GDP.<sup>3</sup> These improvements, which have reduced the region's vulnerability to external shocks, should not make us forget that capital movements are volatile by nature, or that a number of countries still have balance sheet problems, mainly relating to currency mismatches in the financial structures of businesses, financial institutions and the public sector. Again, while the public debt/GDP ratio has fallen, a number of countries

As table 2 indicates, the sharp fluctuations in capital inflows since 1990 have been due essentially to debt and portfolio investment trends. Foreign direct investment (FDI) has also fluctuated, but it has been far more stable than all other forms of financing except immigrants' remittances, which rose steadily to reach 2.2% of regional GDP in 2005.<sup>1</sup>

still have public debt levels close to 50%, which seems quite high (figure 4).

One characteristic of the policies brought in to reduce external vulnerability has been the increasing use of self-insurance, either through large increases in international reserves or, in some cases, through the creation of stabilization funds. Maintaining international reserves as an insurance mechanism has proved costly and inefficient, since returns on reserves are lower than those on other, less liquid assets. Furthermore, the inadequacy of infrastructure and social services means that the opportunity cost of holding reserves can be high.

The logic of self-insurance rests on the fact that, during the 1990s, global financial institutions and markets had no mechanisms for providing emergency loans to supply liquidity for balance-of-payments financing and thus help protect countries from the vagaries of capital flows. In addition, the crises brought to light the failings of the International Monetary Fund (IMF) and its slowness in providing assistance to emerging economies, perhaps because the scale of the problem far exceeded the resources and capabilities available. In most cases, however, the lack of assistance can be put down to an attitude that treated adjustments in the region's economies as a one-size-fits-all response to external shocks.

The financial vulnerability of the Latin American countries has also been heightened by the lack of deep, liquid financial markets at the national, regional and international levels, which has hindered the development of securities with better cyclical properties than foreign currency-denominated bonds. It has proved very difficult to interest investors in government securities such as GDP-indexed bonds, bonds indexed to international prices for leading export products, and local currency-

<sup>1</sup> Although changes in capital movements are usually calculated in terms of GDP, it should be emphasized that their impact on economic activity depends on their effect on the current account, owing to the import adjustments they generate. Thus, the more open a country's economy, the smaller the adjustments in the real exchange rate and economic activity level that will be needed to balance the current account (Calvo, Izquierdo and Talvi, 2003).

<sup>2</sup> This is not true, however, of a number of countries in the Caribbean where the ratio between external debt and exports has not fallen but remains very high.

<sup>3</sup> These indicators present a similar pattern in the region to that of developing countries in other regions. In almost all emerging economies, short-term debt has declined on average while the ratio between short-term external debt and reserves has improved. In addition to all these indicators, the region has moved towards flexible exchange rates in recent years, and this too has reduced vulnerability to external shocks (ECLAC, 2006a and 2006b; Machinea and Kacef, 2006).

FIGURE 4

Latin America and the Caribbean (selected countries): Vulnerability indicators



Source: ECLAC (2006a).

<sup>a</sup> Latin America and the Caribbean.

denominated bonds.<sup>4</sup> The lack of instruments of this type has heightened financial volatility.

In view of all this, there have been a number of proposals for reforming global financial institutions and markets (Ocampo, 2002; Caballero, 2003; Calvo, 2005). However, strategies for improving global financial arrangements have underestimated the role that can be played by regional financial institutions in solving these problems.

More active involvement for regional institutions is justified on a number of counts. First, the contagion effect produced by financial crises has major repercussions throughout the region. Second, regional agreements have resulted in increased intraregional trade and investment flows. Third, macroeconomic ties have strengthened and the externalities generated within a given country by the macroeconomic policies of its neighbours are greater than they used to be (Ocampo, 2006; Culpeper, 2006; Machinea and Rozenwurcel, 2006).

Given all this, regional and subregional funds acting as 'lenders of last resort' could usefully complement

the work done by the IMF in this way (Mistry, 1999; Agosin, 2001). Since the Asian crisis of 1997, in fact, there have been growing calls for regional financial cooperation to establish mechanisms that might prevent the outbreak of new financial crises. Specifically, the main demands have been for emergency lending and the development of deeper, more liquid financial markets. Recent examples are the Chiang Mai Initiative (Thailand), launched in 2000 and involving both the creation of a short-term liquidity facility via a network of bilateral currency swaps, and the creation of an Asian bond market with a view to establishing a fully fledged regional bond market.

In what follows, we shall concentrate on the contribution of existing regional financial institutions in Latin America to emergency financing and the development of financial instruments as means of stabilizing financial flows into developing countries and reducing their vulnerability.

## IV

### Financial integration in Latin America

#### 1. Reserve pooling

The Latin American countries have been building up reserves since the early 1990s (figure A.1 in the appendix). This is largely due to the need to protect their economies from possible changes in the external context, particularly variations in capital flows. A heightening of this tendency since 2002 has been reflected in a large rise in the ratio of international reserves to short-term debt, which is one indicator of an economy's ability to cope with external shocks. Meanwhile, the reserves/imports ratio has not risen greatly, suggesting that the countries are not building up reserves as a way of protecting themselves against trade risks (figure 5).

What is now the Latin American Reserve Fund (FLAR) was created in 1978 as the Andean Reserve Fund

to serve the countries of the Andean Community. Only a few of the region's countries are FLAR participants: Bolivia, Colombia, Costa Rica, Ecuador, Peru and the Bolivarian Republic of Venezuela. The fund acts as a credit cooperative that uses a variety of credit facilities to lend to member countries' central banks in proportion to the capital they have contributed.<sup>5</sup> FLAR

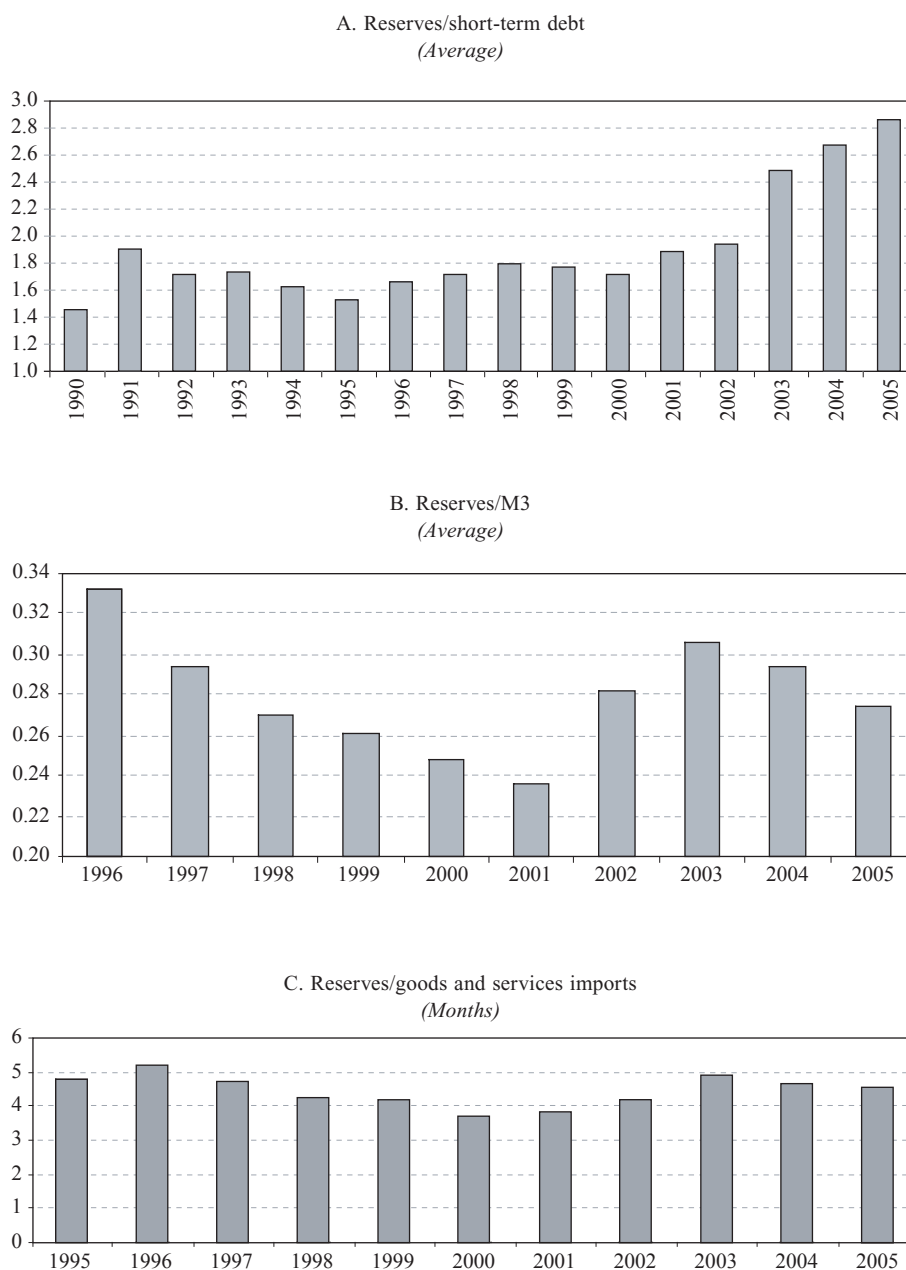
<sup>4</sup> High yields on the bonds indexed to the level of economic activity in Argentina that were issued at the time of the debt restructuring may change this perception and make it easier to sell this type of instrument in future.

<sup>5</sup> (i) Credits for balance-of-payments support are issued for a three-year term, with a one-year grace period, capped at 2.5 times the paid-up capital (except for Bolivia and Ecuador, where it is 3.5 times the paid-up capital), and their approval requires the consent of the board of directors; (ii) credits for restructuring the external national debt are issued for a three-year term, with a one-year grace period, capped at 1.5 times the paid-up capital, and their approval requires the consent of the board of directors; (iii) liquidity credits are issued for a term of up to one year, capped at 1.0 times the paid-up capital, and their approval requires the authorization of the chief executive officer; (iv) standby credits are issued for a term of up to six months, capped at 2.0 times the paid-up capital, and their approval requires the authorization of the chief executive officer; (v) treasury credits (repos) are issued for a term of from one to thirty days, capped at 2.0 times the paid-up capital and 50% collateralized, and their approval requires the authorization of the chief executive officer.



FIGURE 5

## Latin America and the Caribbean (18 countries): Reserve ratios



Source: ECLAC, on the basis of World Bank, *Global Development Finance* (various years) and *World Development Indicators* (various years).

TABLE 3

**Latin America: Disbursements by the Andean Reserve Fund/Latin American Reserve Fund and exceptional financing by the International Monetary Fund<sup>a</sup>**  
(Millions of dollars)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
<b>Disbursements</b>																											
<i>Total<sup>b</sup></i>	15	18	39	53	158	364	686	284	440	291	251	390	390	451	20			234	34		494	125				156	
Bolivia			39	53	53	53	30	165	190		28	96	121	48	20												
Colombia						50	529	85														125					
Ecuador					105	67	127	34	250		93	54	117					234	34		494						
Costa Rica																										156	
Peru	15	18			195					20	130	240	129	403													
Venezuela (Bol. Rep. of)										271			23														
<b>Exceptional financing by the International Monetary Fund</b>																											
<i>Total<sup>b</sup></i>	145	267	261	62	358	532	147	121	224	49	169	1 052	1 906	449	57	897	186	26	557	244	46	23	165	72	98		
Bolivia	38	11	96		27	19			135		91	58	31	31	51		44	26	49	23	46	23	15	24			
Ecuador						218	40	86	89	49	78	20	32	25			142						150	48	98		
Costa Rica			27	20	62	119		35						76	6												
Peru	107	229	145		331	176	107									897				221							
Venezuela (Bol. Rep. of)											974	1 843	317					508									
<i>y<sup>b,c</sup></i>	0.1	0.1	0.1	0.9	0.4	0.7	4.7	2.3	2.0	5.9	1.5	0.4	0.2	1.0	0.4		9.0	0.1		10.7	5.4						

Source: Titelman, 2006.

- <sup>a</sup> The Latin American Reserve Fund accounting year runs from July to June, whereas the International Monetary Fund uses calendar years.
- <sup>b</sup> Latin American Reserve Fund contingency financing is not broken down by country because it is zero for every year. The same applies to disbursements for debt restructuring purposes, except for 1995 and 2003, when funds worth US\$ 200 million and US\$ 156 million were disbursed to Ecuador and Costa Rica, respectively. Latin American Reserve Fund disbursements do not include countries that had zero disbursements for any reason throughout the 1978-2004 period.
- <sup>c</sup> International Monetary Fund disbursements do not include the reserve tranche.

has three objectives: (i) to provide financial support for its member countries' balances of payments; (ii) to improve the terms for its member countries' reserves investments; and (iii) to help harmonize its member countries' monetary and financial policies.

FLAR has been quite successful in providing short-term financing to its member countries. Between its creation and the end of 2003, FLAR disbursed credits worth a total of US\$ 4.9 billion, consisting chiefly of credits for balance-of-payments support and liquidity credits. During the worst years of the 1982-1984 debt crisis, FLAR increased its resource contributions significantly. This was also done in the 1996 and 1998-1999 crises (table 3). During the period from 1978 to 2003, FLAR contributed resources equivalent, on average, to 60% of the amount of IMF exceptional financing provided to the Andean Community countries (Titelman, 2006).

An important feature of FLAR financing is its speed and timeliness. Depending on the type of credit,

loan approvals require the authorization of either the board of directors, which is made up of member countries' central banks, or else the chief executive officer. This arrangement has resulted in speedy and timely financing, giving FLAR an operational advantage over the IMF. This fact was not necessarily reflected in the amounts of resources provided, but rather in the relevance of the credits. The sense of ownership that countries feel towards FLAR is reflected in the preferred creditor status its member countries have given it. The countries' central banks must register any loans granted by FLAR as liabilities in their international reserves account, thereby providing an additional guarantee of repayment. The preferred creditor status of FLAR is reflected in its present Moody's rating of Aa2 and its Standard & Poor's rating of A+.

One of the benefits for countries that join a reserve pool is that they gain access to increased reserve holdings. When their debt capacity with FLAR is added to the member countries' international reserves,

TABLE 4

**Latin America (six countries): Influence of the Andean Reserve Fund/Latin American Reserve Fund on financial vulnerability, March 2003**  
(Short-term debt/international reserves)

	Bolivia	Colombia	Costa Rica	Ecuador	Peru	Bolivarian Republic of Venezuela
Subscribed capital	234	469	234	234	469	469
Paid-up capital	157	313	133	157	313	313
IMF quotas	233	1 053	222	414	878	3 721
Short-term debt	370	3 800	1 499	2 316	2 335	3 720
Reserves	893	10 844	1 497	1 004	9 721	12 107
Short-term debt/international reserves (percentages)	41	35	100	231	24	31
Short-term debt/increased international reserves (percentages) <sup>a</sup>	26	33	82	149	22	29

Source: Titelman, 2006. Prepared by the author using official data from the countries, FLAR and the IMF.

<sup>a</sup> The quotient of short-term debt over increased international reserves is calculated by adding to international reserves the country's capacity for borrowing from FAR/FLAR, this being 2.5 times the paid-up capital except in the cases of Bolivia and Ecuador, where it is 3.5 times.

the short-term debt/international reserves ratio drops significantly in some cases (Bolivia, Costa Rica and Ecuador) (table 4).

The fact that FLAR has played a quite successful role in providing short-term balance-of-payments financing to its member countries raises the question as to the feasibility of expanding its membership. A first element to consider is the correlation of external shocks across countries. High positive correlation ratios weaken the arguments for a reserve pool, as most contributing countries, being similarly affected by external shocks, would need to draw on the fund simultaneously. However, even in the presence of positive correlations, reserve pooling can still be useful if shocks affect different countries with different intensities, since this allows some of the reserves of countries experiencing lower effects to be lent to countries suffering more severe effects.<sup>6</sup> Furthermore, lending at the onset of a liquidity squeeze could prevent or cushion a crisis in a given country and thus reduce contagion in others. Lastly, the ability of FLAR to borrow from financial markets can also help to overcome shocks that have similar effects on the different countries.

Coefficients of correlation between international reserves, private capital inflows and the terms of trade were calculated for the 1990-2005 period across a sample of 10 countries to obtain an initial assessment of correlation. The actual FLAR countries (Bolivia, Colombia, Costa Rica, Ecuador, Peru and the Bolivarian Republic of Venezuela) were supplemented by Argentina, Brazil, Chile and Mexico. The results are summarized in table A.1 of the appendix.

Correlation coefficients between the countries' international reserves are significant (at a 5% level) in 32 out of 45 cases and tend to be quite high. These coefficients may, however, be magnified by the fact that, as previously mentioned, all countries in the sample show an upward trend in reserve accumulation during the period considered (figure A.1 in the appendix). To tackle this issue we used the Hodrick-Prescott filter to detrend the series. Correlation coefficients dropped significantly for most countries, and some coefficients lost significance (only 17 out of 45 were significant at the 5% level). When the exercise is done using annual changes in international reserves, correlations tend to be low and non-significant.

The size of external shocks is not fully reflected in international reserve movements, however, since their effects on the level of these reserves are influenced by countries' exchange-rate policies. This has become even truer in recent years owing to the regional trend

<sup>6</sup> Differences in impact depend not just on the scale of the shock in different countries, but also on the production structure and macroeconomic conditions of each.

towards greater currency flexibility, which facilitates adjustment via relative prices when shocks of this kind occur. Despite this shift towards greater formal currency flexibility, there are clear constraints on large exchange-rate movements. Apart from the impact on inflation and real wages, adjustments of this type affect the balance sheets of companies and the public sector, owing to the significant level of dollarization in a number of economies. In other words, when there are large currency mismatches between the assets and liabilities of the financial sector or the productive sector, a considerable depreciation over a short period will have a strong adverse impact on GDP. Consequently, the level of international reserves still has a key role to play in smoothing external shocks and averting these negative effects.

In view of this, we supplemented our analysis of international reserve dynamics by examining correlations in terms-of-trade and capital flow movements between countries, although changes in capital flows are also influenced by exchange-rate policy. As for the terms of trade, correlation coefficients between countries do not present a consistent pattern. What emerges is a combination of negative and positive coefficients of differing sizes; only 15 of the 45 coefficients are positive and significant — unsurprisingly, since a review of the terms of trade in Latin American countries over recent years shows that tendencies have been heterogeneous. The terms of trade have worsened in the Central American countries (by 12% on average between 1990 and 2005), while they improved by an average of 31% in the South American countries over the same period. Furthermore, the positive average for South America includes a number of countries where the terms of trade have deteriorated.<sup>7</sup>

The conclusions for private capital inflows are similar to those for the terms of trade: there is no clearly defined pattern here either. Positive coefficients are not close to unity in most cases, and most of them are small and non-significant. In general, negative correlations are not significant either. These results

<sup>7</sup> Although the terms of trade are a good indicator of real external shocks, they are difficult to estimate in the short term. A more transparent, quickly obtainable and thus useful indicator for the purposes of emergency financing access are the prices of the commodities exported by the region's countries. Using export prices as a proxy, the analysis shows a more consistent pattern of correlation between countries (27 positive and significant coefficients out of a total of 45 for the 1990-2005 period), although in a number of cases these coefficients are not close to unity (see appendix).

agree with those reported by Urrutia (2006) and Agosin (2001) for another sample of Latin American countries. In a similar framework, Machinea (2003) calculated that coefficients in the MERCOSUR countries were mainly positive but small and, in some instances, non-significant.

The results suggest that expanding the membership of the Latin American Reserve Fund to the new countries considered in the correlation analysis would be feasible, and that countries would not experience financial shocks that were similar or of the same severity. In addition, a regional fund could help to curb mechanisms of crisis transmission between countries.<sup>8</sup>

The need to accumulate international reserves partly depends on their volatility. This being so, reserve pooling benefits member countries by giving them access to a larger volume of reserves or reducing average volatility. Countries whose international reserves are low in relation to their volatility will usually benefit from pooling with countries that have larger reserves. The opposite also holds true, of course, with countries whose international reserves are of low volatility suffering adverse effects by pooling with countries where volatility ratios are higher.

Following Williams, Polius and Hazel (2001) and Eichengreen (2006), we calculated the degree of protection implied by international reserves in view of their size and variability. Equation 1 defines coverage for a country *i* as the ratio between reserve holdings and their variability. Coverage increases as international reserves rise or as their volatility falls:

$$C_i = \frac{R_i}{\text{Var}(R_i)} \quad (1)$$

where  $R_i$  is the average level of reserves during a given time period and  $\text{VAR}(R_i)$  is their variability during the same time period. When a country joins the reserve pool, it will gain access to higher reserve holdings but it will also be affected by the volatility in other countries' reserves. Country *i* will benefit from pooling if the variability of the pool is lower than that

<sup>8</sup> Agosin (2000) calculates that if a reserve fund were endowed with 15% of the reserves of the 11 countries in the region (including all the large countries except Mexico), it could provide financing to cope with capital outflows equivalent to the entire short-term foreign debt of all the countries under the arrangement.

of its individual reserves, or if the increased access to reserves outweighs the higher variability of the pool. The coverage ratio for country *i* becomes:

$$C_i = \frac{\left( R_i + \sum_{j \neq i} \rho R_j \right)}{\text{Var} \left( R_i + \sum_{j \neq i} \rho R_j \right)} \quad (2)$$

In this equation,  $\rho$  is the degree of pooling  $0 \leq \rho \leq 1$ ,  $R_i$  is the total reserves of country *i* and  $R_j$  is country *j*'s reserves. That is, with partial pooling, country *i*'s total access to reserves equals all its own reserves plus the partially pooled reserves of all other members of the pool.

Table 5 shows the mean, standard deviation and volatility coefficient of international reserves in the 10 countries analysed for the period 1990-2005. The volatility coefficients range from 0.56 for Mexico to 0.19 for Chile. Table 6 summarizes the coverage ratios calculated using equation (2) for different values of  $\rho$ . The results show that the countries with the lowest reserve volatility, Chile and Colombia, would lose coverage by joining the reserve pool, since both would experience a decline in effective reserves as compared to self-insurance. The rest of the countries improve their

situation with pooling. Mexico is one of those gaining the most, followed by Ecuador and Peru. These three countries are the ones that have the highest volatility coefficients. These results imply that expanding the membership of the Latin American Reserve Fund is not straightforward, and that there might be incentive problems for countries with high reserves relative to their volatility if they were to join the fund.

TABLE 5

**Latin America (10 countries):  
Reserve variability, 1990-2005<sup>a</sup>**

	Mean	Standard deviation	Variation coefficient
Bolivia	1 226	447	0.36
Colombia	9 916	2 443	0.25
Costa Rica	1 478	479	0.32
Ecuador	1 634	656	0.40
Peru	9 109	3 480	0.38
Venezuela (Bol. Rep. of)	16 034	5 277	0.33
Argentina	18 597	6 445	0.35
Brazil	43 106	14 342	0.33
Chile	14 832	2 829	0.19
Mexico	35 425	19 825	0.56

Source: Prepared by the author using data from the IMF (various years).

<sup>a</sup> The measure of volatility used was the variation coefficient (the ratio of the standard deviation to the mean).

TABLE 6

**Latin America (10 countries): Coverage ratios, 1990-2005**

	p=0	p=0.1	p=0.2	p=0.3	p=0.4	p=0.5	p=0.6	p=0.7	p=0.8	p=0.9	p=1
Bolivia	2.74	3.38	3.41	3.41	3.42	3.42	3.42	3.42	3.42	3.42	3.42
Colombia	4.06	3.69	3.57	3.52	3.49	3.47	3.45	3.44	3.44	3.43	3.42
Costa Rica	3.09	3.44	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.42
Ecuador	2.49	3.38	3.41	3.41	3.42	3.42	3.42	3.42	3.42	3.42	3.42
Peru	2.62	3.12	3.25	3.32	3.35	3.37	3.39	3.40	3.41	3.42	3.42
Venezuela (Bol. Rep. of)	3.04	3.38	3.44	3.45	3.45	3.44	3.44	3.44	3.43	3.43	3.42
Argentina	2.89	3.47	3.56	3.56	3.54	3.51	3.49	3.47	3.45	3.44	3.42
Brazil	3.01	3.29	3.43	3.49	3.51	3.50	3.49	3.48	3.46	3.44	3.42
Chile	5.24	4.28	3.92	3.74	3.64	3.57	3.53	3.49	3.46	3.44	3.42
Mexico	1.79	2.18	2.48	2.71	2.90	3.04	3.15	3.24	3.31	3.37	3.42

Source: Prepared by the author using data from the IMF (various years).

## V

**Financial development**

Imperfections in the financial market have held back the financial integration of Latin American economies with international markets (Ocampo and Martin, 2003; ECLAC, 2000; Calvo, 2002; Caballero, 2003). The lack of suitable instruments for hedging and insuring against the risk of a sudden halt in capital flows and a sharp alteration in the terms of trade (such as bonds indexed to output growth or the price of export goods) has a very high economic cost for the Latin American countries.<sup>9</sup> Furthermore, the two tend to compound each other, since a deterioration in the terms of trade adversely affects borrowing conditions. The result is that the financial markets intensify the economic cycle instead of smoothing it.

Exchange-rate flexibility does not solve the problem, moreover, because emerging economies, and Latin American ones in particular, are highly dollarized. The large currency mismatch that is still a feature of the region makes it difficult to use the exchange rate as a mechanism for adjusting to external shocks, owing to the impact on the balance sheets of companies and the public sector (Eichengreen and Hausmann, 1999).

This is why a number of financial market development proposals call, first, for a larger role for external borrowing in domestic currency and, second, for debt servicing to be tied to the evolution of the economy when borrowing is in foreign currency. Particular proposals of this type include domestic inflation-indexed local-currency bonds, GDP-indexed bonds and bonds indexed to commodity prices (Borensztein and Mauro, 2004; Shiller and Griffith-Jones, 2006; Caballero, 2001). Since these securities are still unattractive to private investors, the task of developing markets for them has proved very slow and difficult. Coordination problems, lack of confidence in national policies and problems of transparency and surveillance are some of the factors holding back the creation of markets of this kind, and international and regional financial institutions need to be actively involved in supporting and facilitating this.

In the Latin American context, there are a number of regional and subregional actors that could give a major impetus to the development of such markets. Regionally, there are the Inter-American Development Bank (IDB) and the World Bank. A number of analysts have proposed that the IDB should lend to Latin American countries in their own currencies by issuing inflation-linked local-currency securities (Fernández Aria and Cowan, 2005; Eichengreen, Hausmann and Panizza, 2005).

In the last two years, the IDB has been promoting the issuance of local-currency securities in Brazil, Chile, Colombia and Peru (table 7). The investor base has been domestic as well as international, and the securities are listed on both local and international markets, which contributes to the price discovery process by creating tension between the two types of market. Also, the bonds add value to international capital markets by providing AAA risk-rated assets denominated in local currency to international investors, who can then allocate currency risk separately from credit risk. By issuing debt in local currency, the IDB helps to improve the countries' balance sheets and contributes to domestic financial markets by introducing best practices, providing risk diversification opportunities to domestic investors, and providing liquidity to the bond and swap markets.

At the subregional level, subregional development banks and the Latin American Reserve Fund could play a similar role.<sup>10</sup> Since the 1990s, subregional banks have increased their funding for the subregions. The Andean Development Corporation (ADC) contributes around 56% of the total resources approved by development banks for the Andean Community countries. Indeed, the ADC has become the main source of financing for the Andean countries, accounting for 68% of all lending approved during 2002. The Central American Bank for Economic Integration (CABEI) has also increased its lending, albeit to a lesser extent and not

<sup>9</sup> Calvo (2005) calculates the output cost of capital reversal at around 5% of GDP in the year that follows the onset of the event. Crane (2005) calculates smaller effects of some 1% to 2% of GDP.

<sup>10</sup> Eichengreen (2006) proposes that FLAR should help to support the development of a market in local-currency government securities indexed to domestic inflation or GDP. This would involve changes to the fund's fiduciary responsibilities.

TABLE 7

## Latin America: IDB issues in Latin American currencies

	Date of Issue	Currency	Amount	U.S. dollar equivalent	Coupon	Maturity
Brazil	11 May 2004	Real	550 million	94 million	0	5 years
Brazil	14 December 2004	Real	200 million	73 million	IGPM + 6.26%	5 years
Colombia	23 June 2004	Peso	120 billion	44 million	CPI + 0.54% (issued at discount)	7 years, payable
Colombia	10 March 2005	Peso	168 billion	73 million	CPI + 3.95%	7 years, payable
Chile	25 August 2005	Peso	36.3 billion	65 million	2.15% in development units (UF)	5 years
Peru	19 May 2006	Nuevo sol	65.2 million	20 million	6.09375%	2 years

Source: García (2006).

so systematically. Compared with the World Bank and IDB, CABEI has contributed an average of around 40% of the total financing approved by these institutions for the Central American countries, peaking at 57% in 2003. The Caribbean Development Bank (CDB) accounted for around 30% of total loans approved by multilateral development banks between 1992 and 2002 (table 8).

The subregional development banks have a much higher investment rating than their member countries.<sup>11</sup> This gives them a solid base for complementing IDB efforts in providing highly rated innovative local-currency assets to international investors.

Developing a securities market like the ones proposed involves major demands in terms of statistical information and the transparency of economic policy management. Greater macroeconomic coordination between the region's countries can thus boost the development of regional financial markets. Unfortunately, progress with macroeconomic cooperation and coordination in Latin America has been limited, although more has been done in the Central American Common Market than in the Andean Community or MERCOSUR. Remembering the difficulties of the past, not only are measures needed to enhance regional integration in different areas of trade and infrastructure

(ECLAC, 2006b, chapter IV), but in the macroeconomic sphere there is also a need for periodic meetings, information-sharing, harmonization of statistics and the creation of supranational forums for policy debate.<sup>12</sup> Although information-sharing is a restricted form of coordination that does not directly influence macroeconomic performance, it does help countries to become better acquainted, gain a deeper understanding of one another's characteristics and situations and adopt a common outlook, all of which is a far cry from the current situation in the Latin American integration process (Machinea and Rozenwurcel, 2006). Stricter coordination would require the establishment of convergence goals for a set of macroeconomic variables. In the regional context, targets would have to be set for the budget deficit, inflation, the current-account deficit and short-term debt. Some of these targets could also provide the basis for the conditionality of the Latin American Reserve Fund, in the event that countries had to meet convergence targets to receive assistance. Given the need to establish feasible objectives, it must be asked how strict the rules would have to be. A degree of flexibility is required to cope with unexpected crises, but excessive flexibility can undermine the credibility of commitments. Despite this, as we have already pointed out, the benefits of

<sup>11</sup> Moody's has given ratings of Aa2 to the Andean Development Corporation, Aaa to the Central American Bank for Economic Integration and Baa1 to the Caribbean Development Bank.

<sup>12</sup> Some progress has been made in this field through the ECLAC Macroeconomic Dialogue Network (REDIMA). See Cárcamo (2005).

TABLE 8

**Loans approved by development banks, 1995-2004<sup>a</sup>**  
(Millions of current dollars)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
a) Andean Community countries										
IDB + World Bank	2 133	1 924	1 392	2 996	2 558	2 152	1 917	1 559	4 124	2 329
ADC	2 258	2 314	2 900	2 673	2 182	2 323	3 198	3 290	3 304	3 503
b) Central American Common Market countries										
IDB + World Bank	876	626	593	1 233	1 027	513	1 079	1 043	513	760
CABEI	358	569	532	932	336	330	572	680	681	800
c) CARICOM countries										
IDB + World Bank	345	506	176	189	334	270	310	326	242	221
CDB	92	73	51	117	137	179	85	108	185	94

Source: Titelman (2006).

<sup>a</sup> IDB: Inter-American Development Bank; ADC: Andean Development Corporation; CABEI: Central American Bank for Economic Integration; CDB: Caribbean Development Bank.

issuing securities with better cyclical properties ought to be an incentive to macroeconomic discipline and policy coordination.

All this means that the countries need to accept some loss of sovereignty and show strong political will to back up the necessary coordination efforts. This is particularly true for the larger countries in the agreement, for which the loss of autonomy is more costly (IDB, 2002, chapter 7). When economic interdependence between the members of an integration agreement is highly asymmetrical, the larger partners

have the responsibility to provide leadership in order to move the integration process forward.

It is worth recalling that one of the mandates of the Latin American Reserve Fund is to encourage macroeconomic coordination between its members, which means that assistance at times of crisis and the issuance of securities with the characteristics described could provide incentives to carry the process forward. However, there is no substitute for political will on the part of the countries.

## VI

### Conclusions

External factors, especially those associated with capital movements, have been among the main causes of the volatility experienced by the region in the last three decades. The scale of the crises associated with this volatility has led to more responsible economic policy-making in recent years, and indicators relating to short-term liquidity needs have improved accordingly. In addition, mechanisms of self-insurance via the accumulation of international reserves, which tend to be costly and inefficient, have become an instrument for confronting external shocks.

If the effectiveness and efficiency of the region are to be improved and its vulnerability to external

shocks thereby reduced, two things are important: the ability to obtain financing at reasonable rates in an emergency, and the development of markets for financial instruments that can help to reduce this vulnerability.

The present article argues that regional bodies can make an important contribution to these two objectives. A good example of the first is the Latin American Reserve Fund which, while it only covers a few countries, has been able to supply short-term financing to its member countries with good results. Since its creation, the fund has contributed resources equivalent on average to 60% of IMF exceptional



financing to the Andean Community countries. Among the most important features of FLAR lending are its speed and timeliness.

Would it be possible to include more of the region's countries in this fund? An analysis of the correlation between different variables that can be regarded as indicators of external shocks shows that extending the geographical coverage of the Latin American Reserve Fund would indeed be feasible. In other words, although the region's countries are affected by similar financial shocks and there is evidence of regional contagion, the expanded FLAR could operate effectively if it carried out emergency lending to more countries in the region. The correlation coefficients of detrended series of international reserves tend to be low and non-significant (only 17 out of 45 are significant at the 5% level). Terms-of-trade correlations do not show a clear pattern either. There is a mixture of negative and positive coefficients of smaller and larger magnitudes, with only 15 of the 45 coefficients being positive and significant. Private capital inflows show positive correlations, but they are generally not close to unity. These results coincide with those reported by Urrutia (2006), Machinea (2003) and Agosin (2000).

Pooling international reserves offers participant countries two possible benefits: access to increased reserve holdings, and a possible reduction in reserve volatility. Estimates for 10 of the region's economies show that countries with more volatile international reserves would tend to benefit from a reserve pooling arrangement. Conversely, lower-volatility countries such as Chile and Colombia would be worse off. This implies that there would be incentive problems for countries with reserves that are high relative to their volatility.

When it comes to markets in government securities incorporating more economic variables, we find that the development of markets in local currency-denominated

domestic inflation-indexed bonds, GDP-indexed bonds and commodity price-indexed bonds has been a slow and difficult process because of coordination problems, lack of confidence in the countries' policies, and problems of transparency and surveillance. The proposal of this paper is that subregional development banks, together with the Latin American Reserve Fund, should complement the current efforts of the IDB and World Bank to promote the creation of markets for instruments of this type.

Deepening financial integration creates needs and incentives for stronger macroeconomic coordination. One way to speed up the slow progress seen in the region would be to combine 'soft' coordination with information-sharing and the creation of supranational forums for policy debate, which would enable countries to become better acquainted and improve their understanding of one another. A stricter form of coordination would mean establishing goals for the convergence of a set of macroeconomic variables. Given that one of the mandates of the Latin American Reserve Fund is to promote macroeconomic coordination, the convergence targets could also provide the basis for the conditionality of the fund, if compliance with the targets were a prerequisite for requesting countries to receive assistance from it.

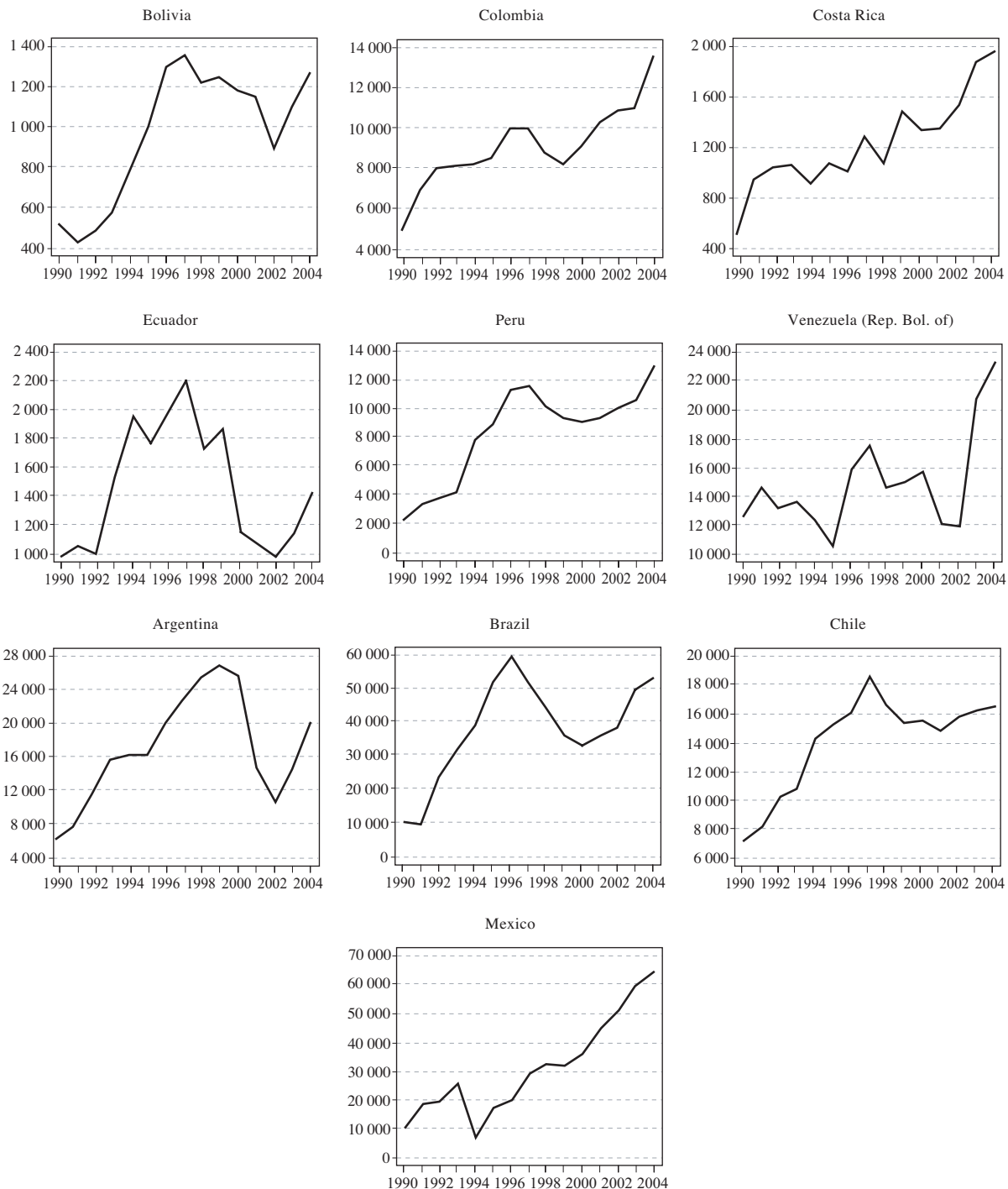
Lastly, it should be stressed that regional financial agreements supplement global arrangements but do not replace them, and a guiding principle in regional financial integration processes should be that of additionality vis-à-vis the global financial architecture. By the same token, subregional development banks and the Latin American Reserve Fund need to coordinate with other international financial institutions to promote financing instruments that are designed to further the countries' financial development.

*(Original: English)*

Appendix

FIGURE A.1

**Latin America (10 countries): Trends in international reserve stocks**  
(Millions of dollars)



Source: World Bank, *Global Development Finance* (various years).

TABLE A.1

## Latin America (10 countries): Simple correlation coefficients, 1990-2005

## International reserves

	Bolivia	Colombia	Costa Rica	Ecuador	Peru	Venezuela (Bol. Rep. of)	Argentina	Brazil	Chile	Mexico
Bolivia	1									
Colombia	0.8551*	1								
Costa Rica	0.8308*	0.8117*	1							
Ecuador	0.7626*	0.7554*	0.5083	1						
Peru	0.9446*	0.9168*	0.7862*	0.8463*	1					
Venezuela (B.R.)	0.7572*	0.7962*	0.7978*	0.5710*	0.7071*	1				
Argentina	0.7426*	0.3941	0.4904	0.6151*	0.6075*	0.5103	1			
Brazil	0.6184*	0.6256*	0.2749	0.8111*	0.7437*	0.3914	0.4711	1		
Chile	0.7966*	0.6984*	0.4902	0.8484*	0.8875*	0.4307	0.6240*	0.8867*	1	
Mexico	0.7559*	0.8526*	0.9330*	0.4522	0.7428*	0.7669*	0.2684	0.2565	0.4048	1

## Detrended international reserves

	Bolivia	Colombia	Costa Rica	Ecuador	Peru	Venezuela (Bol. Rep. of)	Argentina	Brazil	Chile	Mexico
Bolivia	1									
Colombia	0.3574	1								
Costa Rica	0.2353	-0.1345	1							
Ecuador	0.5483*	0.5803*	-0.1267	1						
Peru	0.7117*	0.6669*	-0.0954	0.8067*	1					
Venezuela (B.R.)	0.6101*	0.5173*	0.5682*	0.3378	0.4624	1				
Argentina	0.8084*	0.1220	0.5063	0.4328	0.4710	0.5854*	1			
Brazil	0.4098	0.6420*	-0.3467	0.6969*	0.7810*	0.2738	0.1907	1		
Chile	0.4747	0.6663*	-0.1628	0.7167*	0.8698*	0.3371	0.3114	0.8385*	1	
Mexico	-0.1100	0.0102	0.4509	-0.3114	-0.3423	0.3637	-0.0955	0.3391	-0.4069	1

## Variation of international reserves

	Bolivia	Colombia	Costa Rica	Ecuador	Peru	Venezuela (Bol. Rep. of)	Argentina	Brazil	Chile	Mexico
Bolivia	1									
Colombia	0.3841	1								
Costa Rica	0.1101	-0.1271	1							
Ecuador	0.4514	0.2692	0.0280	1						
Peru	0.4341	0.6731*	0.0211	0.5594*	1					
Venezuela (B.R.)	0.6537*	0.3088	0.4575	0.3736	0.3505	1				
Argentina	0.6474*	0.0433	0.3283	0.3615	0.2506	0.5736*	1			
Brazil	0.2402	0.3420	-0.3035	0.2013	0.3577	0.1751	0.1000	1		
Chile	0.2197	0.4682	-0.0026	0.3032	0.7161*	0.1869	0.1471	0.5546*	1	
Mexico	0.0057	-0.0830	0.3695	-0.0592	-0.3289	0.2609	-0.0213	-0.2044	-0.4694	1

Continued on the following page

Table A.1 (continued)

## Terms of trade

	Bolivia	Colombia	Costa Rica	Ecuador	Peru	Venezuela (Bol. Rep. of)	Argentina	Brazil	Chile	Mexico
Bolivia	1									
Colombia	-0.3857	1								
Costa Rica	-0.0265	-0.5212*	1							
Ecuador	-0.4364	0.8548*	-0.3141	1						
Peru	0.1353	0.4311	0.1345	0.3264	1					
Venezuela (B.R.)	-0.2040	0.9195*	-0.6262*	0.8300*	0.4396	1				
Argentina	-0.5025	0.7688*	-0.2849	0.6323*	0.4609	0.6951*	1			
Brazil	-0.5120	0.2333	0.4063	0.2700	0.2989	-0.0237	0.4723	1		
Chile	-0.2032	0.8929*	-0.5168*	0.7543*	0.5623*	0.8779*	0.6892*	0.2755	1	
Mexico	-0.6184*	0.8073*	-0.4232	0.8840*	0.0798	0.7219*	0.6421*	0.3617	0.7373*	1

## Export prices

	Bolivia	Colombia	Costa Rica	Ecuador	Peru	Venezuela (Bol. Rep. of)	Argentina	Brazil	Chile	Mexico
Bolivia	1									
Colombia	0.5243*	1								
Costa Rica	0.0070	-0.3307	1							
Ecuador	0.4632	0.9092*	-0.3639	1						
Peru	0.8071*	0.7441*	0.1447	0.6413*	1					
Venezuela (B.R.)	0.4704	0.8792*	0.5519*	0.9102*	0.5932*	1				
Argentina	0.5756*	0.5880*	0.3737	0.4233	0.8231*	0.3032	1			
Brazil	0.6666*	0.5601*	0.4638	0.4212	0.8108*	0.2344	0.8566*	1		
Chile	0.7595*	0.8658*	-0.0446	0.7182*	0.8900*	0.6754*	0.6998*	0.7918*	1	
Mexico	0.2650	0.8808*	-0.3315	0.8635*	0.5191*	0.8606*	0.3494	0.3781	0.7017*	1

## Capital flows

	Bolivia	Colombia	Costa Rica	Ecuador	Peru	Venezuela (Bol. Rep. of)	Argentina	Brazil	Chile	Mexico
Bolivia	1									
Colombia	0.2769	1								
Costa Rica	-0.0359	-0.4145	1							
Ecuador	0.3048	0.4135	-0.1336	1						
Peru	0.1488	0.5593*	-0.4953	0.0972	1					
Venezuela (B.R.)	0.3965	0.0319	-0.2219	-0.1989	0.1681	1				
Argentina	0.6836*	0.3872	-0.5573*	0.0972	0.4093	0.4964	1			
Brazil	0.6046*	0.6547*	-0.1858	-0.0183	0.4382	0.3278	0.5000	1		
Chile	0.4935	0.4956	-0.3870	0.1212	0.6923*	0.0766	0.5912*	0.6294*	1	
Mexico	0.2735	-0.3849	-0.0200	0.0505	0.2172	0.0372	0.2922	-0.2847	0.3460	1

Source: Prepared by the authors with data from the World Bank (various years) and ECLAC.

\* Coefficient significant at a 5% level.

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