Turmoil in Latin America and the Caribbean

Volatility, Spillovers, and Contagion

Guillermo E. Perry
Norbert Fiess
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Since May and June 2002 we have witnessed increases in the level and volatility of spreads as well as pressures in the foreign-exchange markets across most of the region. These have been accompanied by political changes and heightened political uncertainty in some countries, notably in Brazil. Some countries, such as Uruguay, Paraguay, and Bolivia, have been facing losses of deposits and reserves of varying degrees of intensity.

In this note we update work from the end of 2001 to August 2002 in an attempt to disentangle potential contagion and spillover effects of the Argentine crisis from other sources of co-movement or market volatility. We also examine the evidence on FDI flows, inquiring about potentially more lasting deterioration of capital flows to the Region.

We do find a moderate increase in cross-market correlations since May and June 2002, against a time trend of substantial decreases in co-movement in country risk since after the Russian crisis. The very high correlation of spreads we observed in the aftermath of that crisis (as well as after the Asian and Mexican crises) had all but disappeared by mid-2000; the development of the Argentine crisis saw a period of increased correlations since the end of 2000 that peaked around September and October 2001, though at levels well below those at the time of the Russian crisis. Another total decoupling lasted from November 2001 until May 2002.

The recent increase in spreads across the region appears more correlated with the largely autonomous increase in spreads in Brazil (caused mostly by uncertainties arising from the electoral period, though also influenced by U.S. stock market turmoil and a fall in exports due to the collapse of the Argentine market) than with the protracted Argentine crisis. To some extent, it reflects some extent general market volatility, which was felt beyond the LAC region. Thus, we may expect that the present situation of high levels and volatility of spreads in the region will be maintained as long as the uncertainties arising from the Brazilian electoral process continue to impact the perception of Brazil country risk; and a further deterioration in this perception might have important consequences on market access and spreads across the region. Political events in other countries (electoral transitions in Bolivia, Colombia, and Argentina, social turmoil in Peru and Venezuela, increased violence in Colombia) as well as some forms of political contagion (Dhuhalde’s statements on the failure of pro-market policies in Mercosur; emerging anti-privatization stances in some countries, such as Peru) may have also contributed to spread increases and volatilities. Volatility and increases in risk perception in OECD markets, as a consequence of recent corporate accounting scandals, might also contribute to volatility and high spreads in the region. However, evidence of such effects is so far significant only for a few countries (notably Mexico and Brazil).

The increase in the level and volatility of spread has been accompanied by a significant reduction in gross capital market flows in the first two quarters of 2002 compared with 2001 levels. Faced with much larger amortizations, such a reduction has put pressure on reserve levels and forced significant current account deficit reductions. These in turn have required large real exchange rate depreciations and aggregate demand contractions. Thus, growth expectations for the year have had to be toned down for most countries in the region.

FDI flows continue to offer a more positive picture. Available figures for the first two quarters of 2002 indicate that in many countries flows are remaining around the levels of 2001 (major exceptions are Argentina and Venezuela). Though lower than the level of flows in 2000 (except for Mexico), these might be taken as an indication that recent financial turmoil in the region has not...
affected the longer-term outlook of investors in a significant way. Indeed, market projections for 2003 and beyond remain largely stable for most countries.

Finally, the deep and prolonged contraction in Argentina, with no light yet at the end of the tunnel, has affected in a major way those countries that have significant direct economic links with the Argentine economy: Paraguay, Bolivia, and, especially, Uruguay. These economies have also suffered from the sharp real exchange rate devaluations in Argentina and Brazil, as their highly dollarized financial systems have limited their ability to respond with nominal devaluations. To the extent that they have devalued, these countries have witnessed significant balance-sheet effects on economic agents with uncovered dollar liabilities, which in turn have caused major financial stress. In addition, the Uruguayan financial system has been severely affected by Argentine residents’ withdrawals, which ended up causing a loss of confidence in the system. Bolivia and Paraguay may also be suffering from reductions in remittances and reverse migration flows, though hard evidence to prove this is lacking. All in all, we cannot rule out major crises developing in these countries as a consequence of these spillovers, if there is no progress in resolving the profound financial crisis in Argentina or if the real continues depreciating.
Co-movement of Spreads in LAC

Sovereign bond spreads are commonly perceived as reflecting market perceptions of country risk. However, evidence of substantial co-movement in sovereign bond spreads over time can be taken as an indication that yield spreads do not only capture country-specific information but also relate to contagion from developments in one particular country or to more general global driving factors (generally referred to as market conditions). Evidence of these common shocks or “emerging market events” has been documented for Latin America and the Caribbean (LAC) during the 1990s after the Tequila crisis in 1994, the Asian crisis in 1997, the Russian crisis in 1998, and the Brazilian devaluation in 1999, all of which led to a substantial co-movement in spreads for some months after the event.

A simple summary measure of co-movement in country risk in LAC is the mean of bilateral correlation coefficients of changes in spreads. This measure is calculated over a rolling window of 60 daily observations. An increase in this measure signals higher co-movement of country risk. The black solid line in Figure 1 depicts this measure from January 1, 1997 to July 23, 2002 and shows that the degree of co-movement in LAC spreads was very high after the Asian and Russian crisis and fell substantially afterwards, though there were some moderate rebounds after the Devaluation of the Real and the building up of the Argentine crisis during 2001. A further unlinking of spreads is evident from September 2001 onwards. From December 2001 to May 2002 there was no significant correlation between spreads (the coefficients were not statistically different from zero). From May 2002 onwards the indicator has been rising again, signaling positive correlation between LAC spreads. This indicator has, however, only reached significant levels again since late June 2002.

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3. Sovereign bond spreads included in this analysis are for Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Panama, Peru, Uruguay, and Venezuela.
The dotted line in Figure 1 excludes Argentina from the mean correlation of changes in LAC spreads. This specification is motivated by the argument that once spreads exceed default levels, their informational content with respect to country risk becomes less obvious, and this might bias the correlations with other spreads. The new indicator tracks the overall mean correlation very closely until September 2001. However, it shows a slightly higher correlation profile since then and correlations remain above the 5 percent level of significance of 0.254. Thus, the falling correlation between Argentine spreads and other LAC countries since September 2001 does not necessarily indicate that developments in Argentina had no impact on LAC country risk, but more likely reflects that Argentine spreads have become less informative with respect to developments in LAC country risk. The increase in May and June in the indicator of co-movement excluding Argentina appears quite significant: driving correlation coefficients at similar levels to those at the peak of Argentine contagion around September 2001. Bilateral correlations shed more light on recent events.

**Country Evidence of Financial Contagion**

**Bilateral Correlations of Changes in Spreads**

Figure 2 shows the mean of spread correlations between Argentina, Brazil, and Mexico with other LAC sovereign bond spreads. This exercise reveals a picture similar to the previous section. While spread correlations between Argentina and LAC have fallen since September 2001 and have reached insignificant levels, spread correlations between Brazil and LAC—despite a substantial decline—remained positive all the time and have increased substantially since June 2002, to levels similar to those at the peak of Argentine contagion in September and October 2001.

The correlation between Mexico’s sovereign bond spread and LAC spreads has fallen significantly since September 2001. As in the case of Brazil, the correlation coefficient has been rising since June 2002, but in this case is still not significantly different from zero.
We also fail to observe any statistically significant correlation with other LAC spreads during 2001 and 2002 in the cases of Chile and Uruguay. The low level of correlation between Uruguay and other LAC countries seems surprising. As bilateral correlations between Uruguay and Argentina are also low, this reinforces the point made in Chapter II that the transmission of developments in Argentina to Uruguay is more direct than through spreads.

The correlation of Colombia and Venezuela only breached significant levels in July 2002 (Figure 3). However, the correlations of Peru, Panama, and Ecuador with LAC spreads have reached significant levels since June 2002 (Figure 4).

Note: In the case of Brazil and Mexico, Argentina is excluded.
Bilateral Correlations of Spreads in Brazil and Argentina with Changes in Nominal Exchange Rates

Figure 5 shows rolling correlations between the EMBI spread for Argentina and Brazil with nominal exchange rates of different LAC countries. The correlation between the Argentine spread and LAC currencies is small and was just borderline significant during mid-2001. The findings for the Brazil EMBI and LAC currencies reveal a similar picture until April 2002. Since then the correlation between the Brazil EMBI and LAC currencies has been rising steeply. This is particularly...
evident in bilateral correlations between the Brazilian EMBI, the Uruguayan peso, and the Peruvian sol (see Appendix).

**Correlations between LAC and U.S. Spreads, Term Structure, and Stock Prices**

Figure 6 shows the rolling correlation between changes in the U.S. junk-bond spread and the Argentine spread, the Brazil spread, and the mean of bilateral correlation with all LAC spreads. Some analysts have alluded to a strong co-movement between the junk bond spread and the LAC spreads during times of crisis, and Figure 6 indicates that this was indeed the case during the Asian and Russian crises. However, since 2001 the correlation between the junk bond spread and LAC spreads has not been significant.

Correlations with S&P 500 and the U.S. term structure are displayed in Figures 7 and 8. 4 Correlations are not significant, with a few exceptions. The negative correlation of the EMBI for Mexico with the U.S. term structure has increased substantially since the beginning of 2001. 5

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4. We also looked at correlations between the Dow and the Nasdaq with LAC bond spreads, and found that they are very similar to the findings for the S&P 500.

5. Duffee (1998) reports a negative relationship between the U.S. term structure and credit risk. Mansi and Maxwell (2000) find that the relationship between the slope of term structure and credit risk is more complex. It depends on the credit rating of the underlying bond and differs further in the short and long run. For bonds rated Ba or higher, they find a positive long-run relationship between the slope and credit risk, while the relationship is negative for bonds rated below Ba. Mansi and Maxwell (2000) explain the negative relationship by the fact that the term structure is an indicator of long-run economic activity and that lower-rated bonds are more sensitive to the economic outlook. If the slope of the term structure increases, the outlook for long-run economic activity improves and credit risk goes down. Mansi and Maxwell find further that the slope of the term structure is not significant for noninvestment-grade rated bonds [see Duffee, G. (1998)]; The relationship between treasury yields and corporate bond yield spreads, Journal of Finance, 53, 2225–2241; and, Mansi, S. A.; Maxwell, W. F. (2000): The stochastic nature and determinants of credit spreads, Texas Tech University, mimeo. It is interesting to note that we observe a significant negative correlation between Mexico’s EMBI and the slope of the U.S. term structure following the investment grade rating of Mexico.
FIGURE 7: CO-MOVEMENT BETWEEN US TERM STRUCTURE AND LAC SPREADS

Co-movement between US term structure and LAC SPREADS

Correlation of changes in US term structure and EMBI spreads

FIGURE 8: CO-MOVEMENT BETWEEN S & P 500 AND LAC SPREADS

Co-movement between S&P 500 and LAC SPREADS

Correlation of changes in S&P and EMBI spreads
Negative correlations of LAC spreads with U.S. stock market indices are most pronounced for Brazil, and they once more reached significant levels for Mexico only in the last two months of 2002.

The Effect of Increased Market Volatility on Correlation of Spreads
The increase in co-movement of asset prices or spreads during periods of financial turmoil is usually interpreted (as we have done above) as evidence of contagion. However, it is well recognized that the correlation coefficient is biased upwards when volatility is high. As market volatility has increased throughout LAC—in particular since June 2002 in Brazil (Figure 9)—the recent increase in cross-market correlation in LAC may be reflecting higher market volatility as much as increased contagion.

Figure 9 depicts the historic volatility of the Brazil EMBI as estimated by a generalized autoregressive conditional heteroskedasticity (GARCH) model. GARCH models are frequently use in financial econometrics to model and predict changes in volatility over time. The spikes in Figure 9 identify periods with high volatility.

![Figure 9: GARCH (1,1) Volatility Estimates for EMBI, Brazil](image)


Capital Market Flows: Sharp Reduction

Gross capital market flows in the first semester of 2002 to LAC (US$23 billion) were significantly below 2000 (US$46 billion) and 2001 (US$43 billion) figures (see Table 1), while they have held at similar levels for other regions. Table 2 indicates the reduction has been generalized across the region. Coupled with a significant increase in amortizations, the drop in net flows has been very substantial (see Table 3) and has been forcing to current account adjustments that require higher currency depreciations and lower growth than previously expected.

A recent study by Deutsche Bank shows that capital outflows from Latin America have increased dramatically in recent years.8 Capital outflows (excluding Mexico) have returned to levels witnessed during the 1982 debt crisis, and capital flight this year alone has already reached 5 percent of GDP. This high level of capital outflow is partly explained by developments in Argentina and Venezuela, which have been experiencing capital outflows exceeding 10 percent of GDP. However, it appears that capital flight is turning more and more into a region-wide trend, which only Mexico appears able to withstand. Mexico has not experienced any significant level of capital flight since the Tequila crisis (Figure 10).

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FDI Flows: Keeping Moderately High

On the contrary, available evidence does not indicate a generalized reduction of FDI flows to the region, though there are significant differences among countries (Figures 11 and 12). Inflows to Brazil were lower in the first quarter of 2002 (−10 percent) compared to the same period of 2001, but recovered above the level of 2001 in 2002 Q2 (+2 percent). FDI inflows to Mexico came down 11 percent in the first quarter of 2002, but are still at a high level. FDI inflows to Colombia were up by 49 percent in the first quarter, while FDI flows to Venezuela continued to collapse (−39 percent). There is no recent data for Argentina and Chile.

<table>
<thead>
<tr>
<th>Country</th>
<th>2001</th>
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<tr>
<td>Total</td>
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</tr>
<tr>
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<td>1.1</td>
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<tr>
<td>Em. Europe &amp; Africa</td>
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Source: WB, IFR Note #12: Capital Flows to Developing Countries., July 19, 2002, Table 1, p.1

Note: Capital outflows are defined as net resident lending abroad plus errors and omissions using IIF data.
TABLE 4: LATIN AMERICA GDP GROWTH FORECASTS FOR YEARS 2002 AND 2003

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<tr>
<td></td>
<td>For year 2002</td>
<td>For year 2003</td>
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<td>Three months ago</td>
<td>July 02</td>
<td>Three months ago</td>
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<td>−1.5</td>
<td>1.5</td>
<td>2.0</td>
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Source: Latin America Consensus Forecasts (various issues).

Growth Prospects

Given the reduction of net capital flows, several countries are being forced to reduce their current account deficits. Overall, the current account deficit of the region is expected to come down from US$49.8 billion in 2001 to US$34.3 billion in 2002. The largest adjustment will take place in Argentina, which is expected to shift from a deficit of US$4.5 billion to a surplus of US$9.8 billion. These adjustments have put downward pressures on exchange rates and slowed down economic activity. Current consensus forecasts predict a contraction of 1.2 percent in regional GDP compared to an increase of 0.1 percent in 2001. In the last three months, these growth projections have been scaled down for most countries, as indicated in Table 4. The largest downward adjustments have taken place in Argentina, Uruguay, Paraguay, and Venezuela. Figures for Brazil, Chile, Colombia, Peru, Bolivia, and Ecuador have also been reduced. As discussed in the respective sections below, expected growth reductions in Uruguay, Paraguay, and Bolivia are a consequence of direct spillovers from the deepening crisis in Argentina.

9. Latin American Consensus Forecasts.
Brazil
Substantial deterioration of economic conditions faced by Brazil is mainly due to domestic political factors and a worsened broad international economic environment. Evidence of direct financial contagion from Argentina is limited. However, the collapse of trade with Argentina has had a significant negative impact on Brazil’s exports. In addition, FDI continues to decline while still financing most of Brazil’s current account deficit. The private sector could face significant problems if the current adverse conditions for access to international finance persist.10

Direct Financial Contagion from Argentina
With Argentina buffeted by recurring credit concerns from October 2000 to its current debt default, the potential for financial market contagion or spillover to Brazil continues to be an issue. Spread correlations between Argentina and Brazil declined substantially between November 2001 (0.8) and May 2002. Since then, correlation has increased; however, the level reached in June 2002 (0.2) is significantly lower than that observed in 2000 and 2001. The recent upsurge in correlation can be associated with the rise in global risk aversion, as opposed to a regional one, when the EMBI spread grew from 600 to 900 basis points during the last two months. A lack of correlation is also evident among other indicators such as stock prices and between Argentinean spreads and the Brazilian nominal exchange rate. The pair-wise correlation between the daily price movement in Argentine and Brazilian stocks decreased from 0.71 in the first quarter of 2001 to 0.42 in the third quarter of 2001. Thus, it is possible to conclude that contagion from Argentina continues to be very limited. The decoupling of Argentina and Brazil can largely be attributed to Brazil’s management of its primary fiscal balance. Argentina’s small primary surpluses contrast with Brazil’s significant and growing surpluses of the last years.

10. Charts on spreads, stock market indices, and Nominal exchange rates for the countries covered in this section are provided in Appendices 2 to 4.
Domestic Politics
The increase in Brazilian spreads and the fall of the Brazilian real are influenced less by Argentinean developments and more by Brazil’s own fiscal and external vulnerabilities, as well as by uncertainties related to the electoral process. That process and pessimistic external account expectations have also affected the exchange rate devaluation. As a result of the nominal devaluation movement initiated in March and April 2002 and the low pass-through to inflation, the real exchange rate was reduced to 1999 levels.

Trade
Exports to Argentina accounted for only 10 percent of Brazil’s total exports in 2001. Nevertheless, the disappointing performance of Brazilian exports, despite the real devaluation of the currency, can in significant part be explained by the reduction of Brazilian exports to Argentina, which in turn prevented a further improvement in the trade balance (Table 5). Comparing the period of January to May 2001 with the same period in 2002, the Brazilian exports to Argentina fell from US$2.4 billion to US$800 million, or by 67 percent. Brazil’s total exports in this period declined from US$24 billion to US$21 billion, or 12 percent. If the level of exports to Argentina had been the same as in 2001, Brazilian exports would have been US$23.4 billion, a decline of 2 percent. Thus, the crisis in Argentina could account for more than 80 percent of the Brazilian export decline.

External Debt
Brazilian external debt is mostly private debt and thus very different from the external debt composition in the 1980s. This allows for additional flexibility to absorb shocks, as opposed to a situation of majority of public debt, since private contracts may be easier to modify if liquidity becomes a problem. Also the holders of Brazilian domestic debt are almost entirely residents. In a broader context, it may also be mentioned that Brazil has a number of capital controls in place, such as a flexible exchange-rate regime, and is not a dollarized economy, which makes capital flight more difficult than in several other Latin American economies. In the last two months, large Brazilian firms either rolled over their maturing debt or entered debt-to-equity swaps. Facing higher refinancing costs, small firms preferred to repay their debts with the redemption of public bonds indexed to the dollar, which they bought in 2001.

FDI
Finally, Table 5 shows that FDI has remained substantial through June, albeit at lower levels than in the record period through 2000. Comparing the first semesters of 2001 and 2002, FDI fell from US$9.9 billion to US$9.6 billion, or 3 percent. Most observers project a further gradual decline to about US$1 billion per month. The rise in global risk aversion and the Brazilian country-specific events could explain this fall.

Uruguay
Uruguay is the country most affected by the crisis in Argentina. In 2001, GDP declined by −3.1 percent, and projections for 2002 suggest another decline of −7 percent to −10 percent, which can be attributed almost entirely to the real and financial economic links existing between the two economies (GDP growth has a correlation of 0). Argentina is the biggest trading partner of Uruguay in terms of services and the second biggest trading partner in terms of goods, after Brazil. The financial link is the result of major private Argentine banks operating their offshore branches in Uruguay, with nonresident deposits—mostly Argentine—in the Uruguayan financial system accounting for 45 percent of total deposits. Also, more than half of foreign direct investment in Uruguay comes from Argentina in the form of construction in Uruguay’s coastal areas.
Argentina is the biggest trading partner of Brazil in services, and the second biggest trading partner in goods, after Brazil. Since the mid-1990s, over 50 percent of total Uruguayan exports were directed to Argentina and Brazil. Exports to the two major trading partners have already experienced a strong contraction since 1998, especially since the devaluation of the real in January 1999 and the recession in Argentina. However, 37 percent of exports are still concentrated in those two countries. In 2002, following the devaluation of the peso in Argentina and the collapse of the convertibility regime, exports to Argentina dropped 70 percent on average in 2002 compared to 2001, which had already been a low year in terms of exports to Argentina.11

Uruguay’s service exports are even more dependent on its neighbor. About two-thirds of the roughly US$700 million of annual tourism receipts are generated by Argentine tourists (about 25 percent of total exports). If tourism receipts drop by about half, the impact would be at least 2 percent of GDP.12

The current crisis in Argentina is affecting trade with Uruguay to a larger extent than would be anticipated on the basis of a normal deterioration in demand from a trading partner and an adverse change in relative prices. The system of payments in Argentina has collapsed as a result of the deposit freeze measures; thus, Argentine importers are unable to make promised payments to Uruguayan exporters. This has affected some Uruguayan exporters during the first two months of the year, and

Table 5: Trade, Real Exchange Rate, and FDI

<table>
<thead>
<tr>
<th></th>
<th>Exports to Argentina</th>
<th>Exports</th>
<th>Imports</th>
<th>Trade Balance</th>
<th>REER</th>
<th>FDI</th>
</tr>
</thead>
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<tr>
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<td>399</td>
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<td>Mar 2002</td>
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<td>4441</td>
<td>4018</td>
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<tr>
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<td>4079</td>
<td>3404</td>
<td>645</td>
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<td>1530</td>
</tr>
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</table>

Source: WB, IFR Note #12: Capital Flows to Developing Countries, July 19, 2002, Table 1, p. 3

Real Links

Argentina is the biggest trading partner of Brazil in services, and the second biggest trading partner in goods, after Brazil. Since the mid-1990s, over 50 percent of total Uruguayan exports were directed to Argentina and Brazil. Exports to the two major trading partners have already experienced a strong contraction since 1998, especially since the devaluation of the real in January 1999 and the recession in Argentina. However, 37 percent of exports are still concentrated in those two countries.

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11. Notice that Uruguay is a relatively closed economy, with total merchandise exports at 11 percent of Uruguay’s GDP, with exports to Argentina (of about $320 million in 2001) being just under 2 percent of GDP. However, the total effect on the Uruguayan economy has much wider economic effects as a result of backward and forward economic linkages.

12. Balance of Payments estimates of exports of services for Uruguay are probably underestimated.
generated some judicial demands. In addition, because Uruguayan importers are anticipating that Argentine importers will have difficulties making agreed payments, Uruguayan importers are in general not exporting to Argentina without payment in advance. This radically reduces the possibilities for business under the current conditions in Argentina.

The strong depreciation of the Argentine peso is also affecting Uruguay with respect to common trading partners, and especially Brazil, which is also Argentina’s biggest trading partner. Uruguayan exports to Brazil were US$440 million in 2001, about 3 percent of GDP. Both economies compete as exporters to Brazil in several areas, in particular dairy products, agricultural products (especially wheat), and meat.

The negative effects are moderated by some developments in Argentina’s economic management which prevent Argentine exporters from taking effective advantage of the change in relative prices. The Argentine government has imposed several constraints on exporters, the most salient ones being the imposition of an export tax of 20 percent and the obligation to liquidate foreign currency holdings at the central bank as soon as the payments from exports are received, in exchange for domestic currency. This latter measure is distorting the behavior of Argentine exporters, especially in agriculture. Fears of a further currency depreciation lead primary producers not to sell a large share of their output. Many are even not harvesting, and are withholding grains from exporting. In addition, several agricultural products critically depend on imports of agroindustrial inputs to sustain the productivity increases observed in the 1990s. Again, the restrictions on Argentine payment system are making it difficult to import key inputs, undermining output and productivity. As a result, competition of Argentine exports in third markets is not as strong as could be anticipated from the observed drastic change in relative prices.

Financial Links
Since the end of 2001, the financial system has exhibited difficulties which were a direct consequence of the crisis in Argentina. Financial contagion from Argentina and a withdrawal of nonresident, mostly Argentine deposits in Uruguay triggered a bank run, with deposits currently being withdrawn at a rate of about US$100 million per week.\footnote{13 Nonresident deposits are 45 percent of total deposits.} Since April, withdrawers have been not just Argentines, but also Uruguayans.

Since the beginning of 2002, the financial system has lost US$5 billion in deposits, which stand currently at US$9.4 billion. Over the same period, Uruguay lost about US$2.7 billion of international
reserves. Currently, the stock is at US$1.1 billion. Part of the loss has been cushioned by an injection of reserves by the IMF of US$0.7 billion. It is important to note that the relative size of the financial system in Uruguay is the biggest in the region, with a level of assets of 110 percent of GDP as of the end of 2001.

Speculative pressures on Uruguay’s financial system and continuous loss of international reserves led the authorities to float the exchange rate starting in June, abandoning the sliding band prevalent before that time. The nominal exchange rate is currently at 23 pesos per dollar, up from 14.4 pesos at the beginning of 2002, and up from 19 pesos at the time of the announcement of free floating. The foreign spread rose sharply, and is currently at over 1800 basis points.

**Paraguay**

The crisis in Argentina is affecting Paraguay largely through three channels. First, and most important, Paraguay is being affected through bilateral trade, which is expected to decline significantly in 2002 relative to previous years. Second, Paraguay is affected through smaller transfers from Paraguayan workers in Argentina, as Argentine wages in dollar terms have declined to about one-fourth of those in 2001, and unemployment in Argentina is rising. A third deleterious effect is felt through the financial sector, because the collapse of the Argentine-owned Banco Aleman led to capital flight and a 30 percent decline in bank deposits.

**GDP Co-movement**

Economic activity in Paraguay is highly correlated with that in Argentina. Real GDP correlation between the two economies in the period 1969–2001 is 85 percent, and the cointegration coefficient measuring the long-run relation between the two log-real GDP series is 0.86. The pictures below depict the high level of correlation of real output for the two economies based on a ten-year moving window. The drop in the early 1990s corresponds to the hyperinflation episode in Argentina.

In terms of growth rates of real output, the partial correlation of real GDP growth in Paraguay with real GDP growth in Argentina is statistically equal to zero (sample: 1969–2001). Latest IMF estimates of growth for Paraguay in 2002 show an estimated growth rate of 0 percent in 2002. Latin America consensus forecasts (Table 4) are more pessimistic, estimating a negative growth rate of −1.4 percent.

**Trade Links**

Argentina is an important trading partner of Paraguay. Exports of domestic goods to Argentina in 2001 were 29 percent of total exports (this figure drops to only 7 percent if re-exports are included into total export, were re-exports refer to imports that are re-exported). As a share of GDP, exports
of domestically produced goods to Argentina were about 5 percent of GDP. Imports from Argentina were 17 percent of total imports in 2001, about 8 percent of GDP. The drastic change in relative prices among the two economies following the devaluation of the Argentine peso is likely to put pressure on Paraguayan exports to Argentina of goods domestically produced. If, for example, exports were reduced to half the level in 2001, the impact is estimated to be at least 2.5 percent of GDP (assuming backward linkages in the production of export goods that are domestically produced are small, and no compensation in terms of exporting to alternative markets takes place).

Reportedly, there is also considerable pressure from Argentine goods flowing over the border into Paraguay in search of markets and hard currency.
Figure 17 shows the evolution of the bilateral real exchange rate, the trade-weighted real exchange rate, and the trade-weighted nominal exchange rate.

**International Transfers**
Foreign transfers from abroad are also expected to be negatively affected by the devaluation in Argentina, as an important share of transfers result from Paraguayans working in Argentina. Preliminary estimates for 2001 indicate foreign transfers to Paraguay of US$167 million. According to IMF, foreign transfers are estimated to decline to US$100 million in 2002.

**Financial Links**
A direct contagion impact can be traced to the sudden collapse of Banco Aleman in Paraguay following on the heels of the collapse of Banco Montevideo in Uruguay, which is owned by the same Argentine financial group (Pereira brothers). The closure of Banco Aleman led to capital flight and a 30 percent decline in bank deposits, which put additional pressure on the exchange rate.

**Exchange Rate Relations**
The devaluation of the Argentine peso affected relative prices among the two economies, as already mentioned above. The nominal depreciation in the first seven months of 2002 has been 29 percent, and on a year-on-year basis has been 52 percent, showing a clear accelerating trend, as can be seen in Figure 18.

This trend in the nominal exchange rate is possibly more a reflection of domestic political uncertainties than the result of speculative pressure against the guarani. However, if relative prices continue to deteriorate, a correction in the exchange rate may take place to accommodate relative prices, as the current account is likely to deteriorate further than anticipated given the severity of the crisis in Argentina.

**Bolivia**
The Bolivian economy is tightly connected to Argentina, as shown by the positive correlation between quarterly GDPs (0.34). The potential negative effects of developments in Argentina on Bolivia include:

- A decline in remittances from Bolivian workers. According to recent official estimates, yearly remittances from Argentina (amounting to about US$30 million in 2001) are expected to drop by 70 percent.
- The repatriation of part of the Bolivian labor force, which in turn would increase unemployment and underemployment in Bolivia. Between 0.5 and 1 million Bolivian citizens live in Argentina (legally or illegally).

**Figure 17: Paraguay’s Real Exchange Rate**
An increase in legal and illegal exports of Argentinean products to Bolivian markets and to Andean countries. Of Argentinean imports (accounting for 14 percent of total imports) many, such as flour, wheat, soybeans, and vegetable oils, compete with key Bolivian products. Moreover, an exchange-rate depreciation in Argentina (and possibly in Brazil and Chile, assuming a competitive devaluation scenario) would displace Bolivian products in the Andean market (particularly in the case of soy products). The Andean market represents 25 percent of Bolivian total exports.
A decline of Bolivian exports to neighboring countries. Argentina and Brazil account for only 6 percent of total non-gas exports, yet this figure does not include informal exports. Only 2.4 percent of Bolivian total exports go to Argentina.

A decline in the availability of foreign credit lines. Up to the third quarter of 2001, foreign credit decreased from US$419 million to US$191 million, of which about US$50 million corresponded to weak banks. External credit lines were reduced or closed for being too expensive, or because some Bolivian banks lost credit worthiness.

An increase in uncertainty and lack of confidence in the Bolivian banking system. Such changes could also reduce the liquidity in the banking system and thus increase the cost of selling government bonds. This can be due to expectations of de-dollarization deposits; deposit withdrawals to buy goods; capital outflows to support Bolivians in Argentina; and a decline in the availability of foreign credit lines.

An increasing pressure to devaluate the domestic currency. This would be damaging for the banking sector, considering that some 95 percent of its financial assets and liabilities are dollarized, and thus there is little if any room to adjust the exchange rate.

Decline in FDI flows. Up to the third quarter, 16 percent of total FDI came from Argentina. On an annual basis, Argentina contributed US$111 million to FDI flows.

Chile

Vulnerability of Chile to developments in Argentina appears to be limited, mostly because of the strengths of Chile’s policy framework, its high level of international reserves, and a healthy banking system. The public and the private sectors have moderate external debt service obligations and almost no foreign-exchange exposure. Chile’s total external debt is about 57 percent of GDP, out of which only 9 percent is public-sector debt. Growth in the first quarter of 2002 was 1.5 percent relative to the first quarter of 2001. While low for Chilean standards, the first-quarter growth rate likely reflects other external shocks, rather than contagion from the crisis in Argentina.

Trade Links

Effects through trade links are likely to be limited. Exports of goods and services are of about one-third of GDP, but Argentina is not a dominant part. Argentina has accounted for only 3 percent of exported goods, mostly agro-industrial, chemical, and textile products of small and medium-sized enterprises. While minor in aggregate, the effects are potentially severe for the particular companies involved. In the first four months of 2002, exports to Argentina dropped 70 percent. Tourism from Argentina has also been adversely affected. Argentina’s real currency depreciation may hurt some Chilean exports to third markets, but the goods exported by the two countries are rather different. The areas of biggest overlap are some fruits, wines, and copper. Argentina’s relative price improvement may only hurt wines, as fruits and copper prices are perfectly competitive markets. Imports of goods from Argentina have represented about one-fifth of total imports, mainly oil, gas, and other intermediate goods. There have been no reports of serious supply interruptions.

Chilean FDI in Argentina

The firms involved face weak local demand, potential losses from currency devaluation, and in some cases regulatory risk and alteration of contracts. Estimated stock of Chilean direct investment in Argentina is about US$4 billion (6 percent of GDP), made by about 33 Chilean companies. This stock represents 10 percent of these companies’ assets and 20 percent of their net worth. Many of these companies also issued guarantees in Argentina, together worth US$0.9 billion. Direct investment in Argentina is concentrated in a small group of large companies. Eighty-five percent is owed by just 11 companies, in the electricity, forestry, beverage, and mass-retailing sectors. Exposure in those sectors in Argentina is on average 15 percent of assets and 23 percent of net worth. Notice that forestry companies are less likely to be damaged, as they are exporters to third markets. Electric companies are the most strongly affected, especially because of regulatory and pricing risk. However, their
overall financial position remains solid and their credit ratings remain stable. Note also that since these companies are largely foreign owned, their losses in Argentina do not directly affect Chilean national income or wealth.

Financial Effects
Developments in Argentina may have affected exchange-rate markets in Chile. Most of those effects may have occurred in 2001, especially from mid-year to October. However, since then Chile appeared financially decoupled from Argentina, and year 2001 ended with a year real depreciation of the Chilean peso of 10 percent (real effective). Substantial and abrupt peso declines were observed in March, July, and September 2001, and currency volatility increased sharply in the third quarter. There was an increase in the simple correlation between the Chilean peso and the Argentine sovereign risk.\textsuperscript{14} However these events may have occurred in part as a result of the fall in copper prices during 2001 - copper exports represent about 36 percent of Chile’s exports and about 10 percent of GDP. In any case, indicators potentially capturing financial effects on Chile of the crisis in Argentina have shown a decoupling since October 2001, as mentioned, when investors seem to have reassessed the magnitude of spillover effects from the neighbor country. So far in 2002, Chilean sovereign spreads remained at approximately 150 basis points. That is below the levels prevailing during 2001 of about 200 basis points.

Peru
The spillover and contagion effects of the Southern Cone crises are expected to have a limited impact on Peru. Direct effects will be minimal, given the dearth of trade between Peru and the region. Exports to Argentina account for just under 0.5 percent of Peru’s total exports, and trade with Brazil, though larger, accounts for 5 percent of Peru’s exports. Though there could be an increase in informal trading, FDI inflows from the region are also weak. At its peak in 1998, Argentine foreign direct investment into Peru was under 2 percent of total FDI. FDI from Argentina has since become negligible. In 2001 it was 0.1 percent. FDI from Brazil is of even lesser magnitude.

The exchange rate has been fairly immune to the situation. From January until recently, the sol has remained relatively steady and has even appreciated in real terms. Low inflation in Peru and improved trade accounts have supported the sol. However recent political upheavals have put pressure on the sol.

Peru could be affected indirectly through financial contagion and the resulting higher spreads in international financial markets. There has been a general rise in spreads for the region, though in Peru’s case this is also the result of political developments and social unrest. Peru was hoping to place more bonds in the market this year. The Argentine crisis, in combination with Peru’s problematic political environment, will likely see higher spreads than those received earlier this year, making Peru’s financing more difficult and expensive.

Ecuador
Ecuador’s direct and indirect ties to Argentina are also fairly limited. As for Peru, exports to Argentina represent a small component (2.5 percent) of total exports. Trade with Brazil is even smaller, at less than 0.5 percent. Ecuador’s inflation contributed to the appreciation of the real exchange rate, and this is a much larger source of instability to trade than the Argentine crisis.

As for financial contagion, Ecuador’s default already limits its access to international financing. Hence, contagion through this mechanism is negligible.

Domestic interest rate spreads did jump from 8 percent to 10 percent between September and October (though this also reflects post-9/11 jitters), when Argentina started having severe prob-

\textsuperscript{14} Simple correlation estimates are upward biased during periods of higher volatility (as explained in Rigobon 1999). IMF staff studies controlling for heteroskedasticity and various fundamentals suggest that the effects of the crisis in Argentina on Chile had been mild.
lems. However, since then, spreads have remained around 10 percent, and have trended downward in the past months. Dollarization also provides some insulation to the country from adverse financial contagion, and the once troubled banking sector is now much stronger and in a better position to resist shocks.

Ecuador could be affected by the level of FDI that it receives. An Argentine company is heading the consortium building the oil pipeline. While its finances are sound for now, Argentine investment in oil fields to use the new oil pipeline have been less forthcoming. Non-oil FDI declined by 54 percent from January to May year on year.

**Colombia**

To date, Colombia has not been one of the countries most affected by the Argentine crisis. Despite a generally more restricted access to international financial markets, Colombian spreads have remained quite stable over the past 18 months. Recent events in Brazil appear to have injected somewhat greater uncertainty in terms of spreads and the exchange rate. One channel of possible contagion from Argentina are FDI flows, where the sale of a public bank has been indefinitely postponed due to lack of buyer interest given large banking losses in Argentina. It remains the case that domestic events have had a greater weight than external factors in determining the evolution of FDI, exchange rates, and spreads in Colombia.

**Trade Effects**

Trade links between Argentina and Colombia are small, and there have not been any strong effects on Colombian trade following the Argentine default. Similarly, trade volumes between Colombia and Brazil, and Uruguay and Paraguay—some of the countries most affected by the Argentine crisis—are also weak. Nevertheless, it is true that exports to Mercosur have fallen from US$24.7 million to US$8.5 million between January 2001 and February 2002 (from 2.5 percent to 0.9 percent of total exports). Colombia’s major trading partners are the United States, Venezuela, and Ecuador, and events in the former two countries in particular have had a much more significant effect on the country’s exports than have events further south. Falling commodity prices and export volumes have also played an important role in the evolution of Colombia’s exports, and heavy reliance on commodity exports continues to expose Colombia to large fluctuations in terms of trade.

**Exchange Rate**

Unlike the currencies of most other Latin American countries, the Colombian peso underwent a strong appreciation during much of 2002, lasting into early June. Over the past two months, this trend has reversed, and the peso has now depreciated by about 10 percent so far this year, with uncertainty in Brazil likely to have played some role. The real exchange rate, in turn, has therefore appreciated with respect to many other Latin American countries (such as Brazil, Uruguay, and Venezuela), and this may have played a role in the decline of Colombia’s nontraditional exports. Nevertheless, the major cause of the reduction in nontraditional exports has been low growth in the United States and in Venezuela.

**Financial and Other**

There have been no direct financial spillovers from events in Argentina. Relative capital account stability has allowed the Central Bank to reduce interest rates.

**Spreads and Market Access**

Colombia’s sovereign spreads have remained stable, at about 600 basis points. For much of the year, small movements in spreads have reflected domestic rather than international events (for instance, the breakdown of peace negotiations, Uribe’s electoral win, the appointment of the economic team). In recent weeks, spreads have crept upwards and now stand at 700 basis points. Perhaps a more important effect of the Argentine crisis has been the reduced access to international capital
markets. Colombia did not access the markets between January and June this year; in late June, Colombia managed to raise US$500 million in the international bond market. Given Colombia’s large upcoming amortization and debt-service payments (for an estimated US$4 billion in 2003), continued tight market access could spell potential problems for financing next year.

FDI

Spanish investments in the region, thus far a major source of FDI, are expected to adjust downward as a consequence of the substantial losses sustained by Spanish companies in Argentina. For Colombia this represents perhaps the only direct impact of the Argentine crisis, as the sale of one of its public banks (Banco Cafetero), has been indefinitely postponed due to lack of buyer interest.

Venezuela

Despite relatively firm international oil prices, a combination of political instability and inadequate macroeconomic policy responses have led to a sharp recession in Venezuela this year. However, the country’s economic problems are only weakly related to the Argentinean crisis. Since direct trade and investment links between Argentina and Venezuela are weak, the Argentine crisis has not posed a direct threat to the economic performance of Venezuela, with the country’s own governance and policy problems posing the greatest risks to its economy. Through indirect channels, the Argentine crisis might nevertheless have inflicted limited damage on Venezuela by weakening trade flows with the Andean countries and other Latin American trade partners; playing a part in increasing the cost of international borrowing; and slowing down direct investment flows to Venezuela.

Trade

Direct trade and investment links between Venezuela and Argentina are weak. Venezuela has a highly specialized, oil-exporting economy; the risks it faces are primarily related to developments in the oil industry. The recession that is now unfolding in Venezuela is rooted in the inconsistencies of macroeconomic policy responses to oil price fluctuations in recent years, compounded by a sustained deterioration in the country’s governance conditions.

However, in recent months the Argentine crisis could have had a mild impact on Venezuela’s external position, through various indirect channels. First, the Argentine crisis might have resulted in a deterioration of Venezuela’s trade balance, through a reduction in non-oil exports to Andean and other Latin American countries, as a coincident slowdown in these economies (induced by developments in Argentina) would have reduced demand for Venezuela’s non-oil exports. However, the impact of an export slowdown to regional partners would likely be small, as non-oil exports represent less than 20 percent of total exports. Assuming a fall in non-oil exports of similar magnitude as that observed in crisis year 1999 (that is, about 25 percent) the projected 2002 current account surplus would fall by an amount equivalent to 1.3 percent of 2002 GDP (or about US$1.2 billion).\footnote{15}

Financial Links

Although Argentina and Venezuela have rather different economic structures, private investors often lump them together in the same asset class. To the extent that the Argentine crisis has led to broad market movements across the emerging markets or Latin American asset classes (either directly or through impact on other important emerging economies, such as Brazil) positive co-movement of Venezuelan assets with Argentinean and other emerging market assets could be

\footnote{15. Please note that developments in the first half of this year in Venezuela point to a real exchange-rate depreciation (on a trade-weighted basis) of approximately 25 percent. A real depreciation can be expected to partially offset the impact of a slowdown in the level of economic activity in Venezuela’s trading partners.}
expected. While spreads in Venezuela have increased since roughly mid-2001, there is little conclusive evidence that the Argentine crisis is primarily responsible for this increase.16

Contagion from Argentina through portfolio and equity investment flows also appears limited. The simple correlation between monthly changes in Argentine and Venezuelan equity markets is relatively low for the period January 1999 to June 2000 (at 0.33). Moreover, Venezuelan and Argentine equity markets have already decoupled trend-wise for at least two years (see Figure 20). Furthermore, the simple correlation between monthly changes in the Venezuelan and Argentine equity markets was negative in 2002 (at −0.72). Going forward, it appears that industry and country-specific events are going to be the primary drivers of equity markets in Venezuela.

**FDI**

Direct investment inflows to Argentina and Venezuela have moved in opposite directions since 1998 (see Figure 21). The simple correlation between yearly changes in net FDI flows to Argentina and Venezuela has a negative sign (−0.32) for the period from 1990 to 2001. There is some evidence that the magnitude of the (negative) association between investment flows to Argentina and Venezuela has actually increased in recent years. This makes sense, to the extent that FDI flows to Venezuela depend primarily on industry-specific events (such as developments in oil markets) as well as trends in the country’s investment climate. Nevertheless, it is possible to calculate a ceiling on the impact on FDI flows resulting from a deterioration in the external environment. On the basis of the decrease in FDI experienced between 1998 and 1999 (related to fallout from the Asian and Russian crises), we estimate that FDI inflows to Venezuela would decrease by no more than US$900 million in 2002, relative to the 2001 level of US$2.7 billion.

16. External debt refinancing will, however, present a rather challenging business in 2002 for Venezuela. The country’s short-term external debt stands at about US$2 billion. Moreover, preliminary figures indicate that, on a gross basis, the country is likely to need refinancing (from private-sector sources alone) of US$4 billion of medium- and long-term external debt in 2002. The cost to authorities of obtaining this financing remains unclear. However, as long as oil prices remain relatively firm, additional external financing needs are likely to be limited and no difficulties in servicing the existing level of external debt (short- and long-term) should be expected. Under the assumption that about three-quarters of the country’s refinancing needs are in fact satisfied in 2002, a deterioration by about US$1.5 billion would register in the capital account (relative to a neutral hypothetical external environment, where all of the country’s refinancing needs would have been satisfied).
Domestic Outlook

Combining the estimated deterioration in Venezuela’s non-oil trade balance due to an economic slowdown in trading partners, together with the impact of failure to refinance part of the country’s external debt and a drop in FDI resulting from an adverse external environment, a maximum deterioration equivalent to about US$3.6 billion (or 3.8 percent of projected 2002 GDP) in the country’s external balance, may be expected. The deterioration in the current account is not likely to exceed US$1.2 billion, with projected weakening of the capital account capped at US$2.4 billion.17

The order of magnitude of the estimated deterioration in the country’s external balance, resulting mainly from an overly negative external environment, needs to be compared with projected exports of goods and services in the region of US$26 billion, a projected current account surplus of US$3.1 billion, and total foreign exchange reserves amounting to about US$15 billion in 2002.18 Moreover, private capital flight, largely motivated by difficult governance conditions in Venezuela, amounts to an estimated 10 percent of 2002 GDP (or about US$11 billion). In view of relatively firm oil prices, it should be clear that the deterioration in the country’s external environment (including as a result of the crisis in Argentina) is likely to continue playing only a minor role as a determinant of Venezuela’s macroeconomic performance.

To summarize, a deterioration in the country’s external environment (fed in part by the Argentine crisis) is likely to lead to a mild deterioration in Venezuela’s external balance, relative to a scenario of neutral external conditions. Nevertheless, the key factors that have led to this year’s economic recession in Venezuela are a deterioration in the country’s governance conditions (which has motivated large private capital outflows) together with inadequate policy responses to oil price fluctuations.

Mexico

The impact of a financial crisis in one, or several, of the major Latin American economies on Mexico has, for now, been extremely limited. The close economic and financial integration of Mexico with the U.S. implies that prospects for the Mexican economy remain heavily dependent on the shape of the U.S. recovery. The recently increased volatility and deterioration in some Mexican financial mar-

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17. These calculations should be interpreted in relation to a scenario with neutral external conditions, different from the current adverse external environment (for which the Argentine crisis is partly to blame).

18. These projections are based on average oil price for the Venezuelan oil export basket of about US$19 per barrel in 2002.
ket indicators—exchange rate, interest rate, and sovereign risk spreads—can be attributed to concerns about that recovery. A political gridlock on the legislative reform agenda and a downward adjustment of the expectations and the perceived performance of the Fox administration are some additional elements that may have led to a deterioration of the financial market indicators. The possibility of a negative impact on Mexico from a worsening of the financial crises in Argentina and Brazil should not be ruled out—although, for the moment, the perception of Mexico as a regional safe haven prevails.

**Trade**

Trade links between Mexico and the rest of Latin America are weak. Mexico exports an amount of US$3 billion to other Latin American countries or 1.9 percent of total exports, and imports US$4.7 billion or 2.8 percent of total imports. However, trade figures for the first four months of 2002 provide some indication of economic distress and increased competitiveness of trading partners due to currency depreciation in the rest of the region. Mexican exports between January and April 2002 to the rest of Latin America amounted to US$921 million, down from US$1.058 billion in the same period of the previous year, whereas imports from Latin American countries over this four-month period are up from US$1.379 billion last year to US$1.59 billion this year. Trade with Argentina accounts for about 9 percent of Mexico’s total trade with Latin America, whereas trade with Brazil represents a much larger and more rapidly growing segment of about 35 percent. Overall, trade relations seem too weak to induce significant spillover from a financial or economic crisis in the rest of the region or parts thereof.

**Exchange Rate**

The Mexican peso is diverging from the troubled path being followed by other Latin American currencies, notably the Argentine peso and Brazilian real. After an extended period of strengthening that led to concerns regarding Mexican competitiveness, the recent decline of the Mexican peso seems to be more in line with dollar-euro dynamics, in turn reflecting concerns about U.S. recovery and corporate distress. In addition, the market perceived competitiveness concerns as the driving force behind the relaxation of monetary policy in early April, which triggered the recent depreciation of the peso. Between the end of March and the end of June, the peso depreciated 10 percent, though it has recovered a third of that depreciation in the past few weeks. The appreciation of the peso with respect to Latin American currencies is unlikely to have a major impact on overall economic performance in view of the limited trade links between Mexico and the rest of Latin America. The modest recent depreciation of the REER, largely determined by the peso/dollar rate due to the intense trade relation with the U.S., is not yet endangering the country’s inflation target, largely due to weak domestic demand, whereas it did raise moderate concerns about Mexican competitiveness.

**Financial and Other**

There have been no reported direct financial spillovers from the crises in Argentina or Brazil, most likely due to the absence of extended, direct financial relations among investors of these countries. Mexico’s largest commercial bank, Banamex, now owned by Citigroup, liquidated its investment in the Argentine Bansur in mid-December last year, cutting its losses and eliminating any financial liability.

**Spreads and Market Access**

Mexico’s market access and sovereign spreads showed a continuous improvement, anticipating and following the upgrade to an investment grade rating early this year of the country’s sovereign credit risk. All three major international credit rating agencies, Moody’s, Standard & Poor’s, and Fitch, now maintain an investment grade rating on Mexico’s sovereign debt, thereby allowing a host of institutional investors to take and keep Mexican bonds in their portfolio. In line with the performance of the exchange rate, the country risk spread showed an important strengthening until March this year when, compared to an average of 360 basis points observed throughout 2001, it reached a historic low of 233 basis points. More recently, the sovereign risk spread has been moving upward.
to a range of 330–350 basis points. While some connection with a further deterioration of the financial crisis in Argentina and its spillover to other Latin American countries cannot be fully discarded, worsening prospects of a U.S. economic recovery and the domestic political gridlock on legislative reform are more likely factors that have led to an adjustment of expectations regarding the performance of the Mexican economy.

**FDI**

Over the past few years Foreign Direct Investment financed all or the major part of Mexico’s external (current account) deficit. FDI inflows have averaged about US$12 to 14 billion per year over the last few years, and last year shot up to a record of almost US$25 billion due to the sale of Banamex to Citi Group. FDI inflows are closely related to the financial and economic integration with the United States, particularly since NAFTA. Continued FDI inflows are much more related to the perspectives of trade expansion and competitiveness of producing in Mexico for the North American market, as well as the expansion of possibilities of private and foreign investment in the domestic market, such as in the power sector. Sources and areas of FDI are too diversified to expect the financial crises in other Latin American countries to cause major financial distress to business groups. FDI over the first quarter this year was slightly down at US$2.7 billion from US$3 billion last year. However, last May and June the government had no difficulty recently in selling Aseguradora Hidalgo to Met Life at US$920 million and its remaining stake in BBVA-Bancomer at about US$850 million (largely to international investors).

**Central America**

**Recent Developments**

Current events in international financial markets related to difficulties in the Southern Cone are exerting some pressure in Central American financial markets, where spreads have increased by about 100 basis points since May 2002. This observed evolution is very similar to the one observed for Mexican bonds and, given the relatively low financing requirements of the Central American countries over the next few months, seems manageable. Two differentiating factors for the Central American financial markets should be taken into account. First, a very large share of the Costa Rican, Guatemalan, and Salvadoran bonds are kept by local investors; second, Central America benefits from large flows of remittances which provide a significant source of foreign exchange. However, an aggravating crisis in the South, or a significant transmission to Mexico, could potentially raise concerns in such countries as Costa Rica and Panama, both of which have fiscal policies that are likely to be unsustainable in the long run.

**Financial Markets**

Financial markets have tended to lump government bonds from these countries in a category apart from those in South America. Government bonds have usually fluctuated in line with Mexican prices, due to the stronger economic linkages with the large neighbor to the North. Panama has been traditionally considered a safe haven, enjoying large capital inflows when crises hit elsewhere.

In the past three years, Panama, Costa Rica, Guatemala, and El Salvador have accessed international capital markets occasionally. Spreads for their bonds have been very low (between 200 and 300 basis points), and somewhat higher for Panama (300 to 400 basis points). It is well known that a very large share (up to 90 percent) of the bonds for Costa Rica, Guatemala, and El Salvador are kept by local investors, including pension funds and financial institutions.

As for the increase in spreads for all four countries since mid-May, Wall Street analysts indicate this is a reflection of general market conditions and is a rather small tightening compared to what has been the case elsewhere. Also, as noted above, the evolution in spreads is fully consistent with observed developments in Mexico. Despite the difficult atmosphere, on July 16, Panama successfully and discreetly placed US$150 million in Global Bonds due 2012 (yield of 9.975 percent and a spread of 531 basis points). The transaction attracted a handful of very high-quality institutional U.S. investors. Additionally, Panamanian spreads have stabilized since late June as a result of the
authorization of debt buy-backs by the Fondo Fiduciario para el Desarrollo (FFD) for up to US$1 billion of global bonds.

Market analysts report that it is unlikely that any of the Central American countries could face difficulties in accessing financial markets within the next few months, unless markets dry up completely for an extended period of time. They point out that due to high local holdings, spreads are only likely to increase if local investors perceive a dramatic deterioration in local fundamentals. If weak economic conditions persist, Costa Rica and Panama could suffer due to their weakening fiscal position. However, the Government of Costa Rica is not expected to tap external markets until next year, since Congress ordinarily allows one placement per year. (They placed US$250 million early this year.)

FDI
FDI is a significant source of external financing only in the case of Costa Rica. None of the countries in the region report significant changes in FDI flows for 2002, although the slump in the U.S. technology sector may affect planned investments in Costa Rica.

Spillover effects
Spillover effects to the real sector are likely to remain negligible for the next few months. The economic linkages of the Central American countries with those in South America have traditionally been weak. The bulk of trade occurs with the United States, within the region, and with Mexico. The share of total trade with all of South America is less than 7 percent for all countries. Furthermore, recent trends have strengthened linkages between this subregion and the United States (for instance, the revamped Caribbean Basin Initiative in 1999 plus early stages of negotiation for a free trade agreement), as well as with Mexico (such as free trade agreements approved in the recent past with virtually all Central American countries). Moreover, as noted above, most countries in the subregion receive large flows of remittances, a steadfast source of foreign exchange (especially El Salvador, Guatemala, Honduras, and Nicaragua).

Jamaica
Recent Developments
Jamaica’s vulnerability to external shocks has been increased by recent domestic shocks from adverse weather conditions. Moreover, it has also not fully recovered from the impact of the September 11, 2001 attacks on the United States, which particularly decreased tourism, the largest foreign-exchange earner in Jamaica. These external and domestic shocks trimmed GDP growth and have also resulted in weaknesses in the fiscal accounts as well as the current account of the balance of payments. At the end of fiscal 2001/02 (fiscal year is April through March), the fiscal deficit increased to 5.7 percent of GDP, which meant that the debt to GDP ratio declined only marginally. The current account deficit increased by 3 percentage points to 8.5 percent of GDP. In addition, net international reserves, which reached a high of nearly US$2 billion at end March 2002, fell to US$1.7 billion in June 2002.

Contagion
The government has been quite mindful of potential contagion in the region. In December 2001, the government successfully issued international bonds for US$250 million to pre-fund the large external debt service falling due in fiscal 2002/03. In June 2002, the government raised US$300 million on the Eurobond market for 15 years at a yield of 10.62 percent, in an issue that was heavily over-subscribed. These steps, together with the substantial net reserves of US$1.7 billion (about 20 weeks of imports of goods and services), mean that Jamaica has some cushion to absorb shocks and possible reversals of financial flows—its net reserves in March 2003 are projected at 120 percent of debt due within a year (including debt service of medium and long-term loans).

Looking at Table 6, we see in the base case that the net financing requirement is US$592 million, of which US$300 million has already been raised recently. Also, there was excess reserve
### Table 6: External Financing Requirement for Jamaica with FDI Shocks

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Account Balance</th>
<th>Debt Amortization</th>
<th>Gross Financing Requirement</th>
<th>International Reserves</th>
<th>FDI Multilateral Disburs.</th>
<th>Change in international reserves</th>
<th>Net Financing Requirement</th>
<th>Net Financing including change in reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997/98</td>
<td>386</td>
<td>295</td>
<td>681</td>
<td>595</td>
<td>169</td>
<td>87</td>
<td>-53</td>
<td>425</td>
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<tr>
<td>1998/99</td>
<td>219</td>
<td>413</td>
<td>632</td>
<td>582</td>
<td>309</td>
<td>85</td>
<td>-13</td>
<td>238</td>
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<tr>
<td>1999/00</td>
<td>317</td>
<td>397</td>
<td>714</td>
<td>704</td>
<td>359</td>
<td>133</td>
<td>122</td>
<td>222</td>
</tr>
<tr>
<td>2000/01</td>
<td>427</td>
<td>292</td>
<td>719</td>
<td>1,286</td>
<td>530</td>
<td>247</td>
<td>582</td>
<td>-58</td>
</tr>
<tr>
<td>2001/02</td>
<td>585</td>
<td>325</td>
<td>910</td>
<td>1,942</td>
<td>448</td>
<td>193</td>
<td>656</td>
<td>269</td>
</tr>
<tr>
<td>2002/03</td>
<td>608</td>
<td>727</td>
<td>1,335</td>
<td>1,600</td>
<td>523</td>
<td>220</td>
<td>-342</td>
<td>592</td>
</tr>
<tr>
<td>2003/04</td>
<td>566</td>
<td>291</td>
<td>857</td>
<td>1,600</td>
<td>546</td>
<td>154</td>
<td>0</td>
<td>157</td>
</tr>
</tbody>
</table>

**Scenario with Reduction in FDI**

20% decline:

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Account Balance</th>
<th>Debt Amortization</th>
<th>Gross Financing Requirement</th>
<th>International Reserves</th>
<th>FDI Multilateral Disburs.</th>
<th>Change in international reserves</th>
<th>Net Financing Requirement</th>
<th>Net Financing including change in reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002/03</td>
<td>-608</td>
<td>727</td>
<td>1,335</td>
<td>1,600</td>
<td>418</td>
<td>220</td>
<td>-342</td>
<td>696</td>
</tr>
</tbody>
</table>

40% decline:

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Account Balance</th>
<th>Debt Amortization</th>
<th>Gross Financing Requirement</th>
<th>International Reserves</th>
<th>FDI Multilateral Disburs.</th>
<th>Change in international reserves</th>
<th>Net Financing Requirement</th>
<th>Net Financing including change in reserves</th>
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</thead>
<tbody>
<tr>
<td>2002/03</td>
<td>-608</td>
<td>727</td>
<td>1,335</td>
<td>1,600</td>
<td>314</td>
<td>220</td>
<td>-342</td>
<td>801</td>
</tr>
</tbody>
</table>

**Note:** We assume that Short term debt is unchanged in 2003/04
accumulation in 2001/02 owing to the pre-funding of US$250 million, which will be drawn down in the current year as the government services its debt. It is therefore relevant to look at the last column, which indicates net financing needs including changes in reserves of US$250 million. Having already placed bonds in excess of this in the current fiscal year, Jamaica appears to be quite comfortably placed to withstand shocks and absorb the impact of deviations from anticipated inflows.

**FDI**

Given the patterns of financing, and the international outlook, it is Jamaica’s dependence on FDI that could be the source of some volatility in inflows. FDI inflows have been increasing steadily since the mid-1990s, largely for investment in the tourism and telecommunications sectors. FDI totaled about US$450 million in 2001/02 and is projected to increase further to about US$523 million in the current fiscal year. If FDI is affected by general pessimism on emerging markets, it is more likely to affect tourism than telecommunications, as most of the telecommunications infrastructure is targeted to domestic consumers. As Table 6 shows, even if there is a 40 percent decline in FDI receipts from what is projected, net financing requirements would be US$459 million (with draw down in reserves). This means that the government would need to borrow another US$150 million in the market, or draw on reserves, or a combination of the two. Given the enthusiasm for Jamaican bonds in the recent issue, another issue of this magnitude does not appear to be a major problem.

Of course, increased financing does affect the larger problem of Jamaican debt, which continues to be the single biggest concern in Jamaica—current debt is about 130 percent of GDP. To prevent the debt from increasing and becoming unsustainable, Jamaica runs a very large primary surplus, and will have to continue doing that in the medium term in order to bring its debt down to a more manageable level.

**Spillover Effects**

The bulk of Jamaica’s trade is with North America, Europe, and CARICOM, accounting for more that 80 percent of total trade turnover. The biggest foreign exchange earners are tourism and bauxite. Given this situation, it is unlikely that changes in REER or trade competitiveness in Argentina or Brazil or secondary changes in other LAC countries will affect Jamaica to any significant degree.

**Dominican Republic**

**Recent Developments**

In 2001, the economy grew at 2.7 percent in spite of the effects of September 11 and the slowdown in the world economy. The overall deficit of the central government remains low. It decreased from 3.2 percent of GDP in 1999, to 2.1 percent in 2000 and 1.7 percent in 2001, and is expected to decrease to 1.3 percent of GDP in 2002.

Inflation is projected to fall from 8.9 percent in 2001 to 4.8 percent in 2002. The exchange rate has remained stable in nominal terms but appreciated in real terms. In spite of this and the negative effects of September 11 events on net exports and tourism revenues, the external current account deficit narrowed to 3.9 percent of GDP in 2001 (from 5.1 percent of GDP in 2000), due to declining international oil prices, increasing private remittances. FDI inflows increased, and were especially high in the electricity, tourism, and financial sectors.

**Contagion**

On September 20, 2001, the DR government issued US$500 million of sovereign bonds (coupon rate of 9.5 percent, 576 basis points over comparable US treasuries, and a bullet payment due in 2006), which were very well received by international markets. This has allowed the government of the Dominican Republic to strengthen, albeit moderately, net international reserves. Further strengthening of reserves would be required to deal with the volatile international environment that the country faces, given its dependence on the tourism sector.

Table 7 shows that external financing needs appear to be well covered by relatively stable sources of financing, namely FDI and multilateral financing. Thus, in the base-case scenario, the net financing
Table 7: External Financing Requirement for DR with Tourism and FDI Shocks

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Account Balance</th>
<th>Debt Amortization</th>
<th>Gross Financing Requirement</th>
<th>International Reserves</th>
<th>FDI Disburs.</th>
<th>Change in Reserves</th>
<th>Net Financing Requirement</th>
<th>Net Financing including change in reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>-163</td>
<td>192</td>
<td>355</td>
<td>397</td>
<td>421</td>
<td>61</td>
<td>110</td>
<td>-127</td>
</tr>
<tr>
<td>1998</td>
<td>-338</td>
<td>217</td>
<td>555</td>
<td>507</td>
<td>700</td>
<td>84</td>
<td>110</td>
<td>-229</td>
</tr>
<tr>
<td>1999</td>
<td>-429</td>
<td>221</td>
<td>650</td>
<td>695</td>
<td>1,338</td>
<td>176</td>
<td>188</td>
<td>-864</td>
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<tr>
<td>2000</td>
<td>-1,011</td>
<td>271</td>
<td>1,282</td>
<td>631</td>
<td>953</td>
<td>183</td>
<td>-64</td>
<td>146</td>
</tr>
<tr>
<td>2001</td>
<td>-538</td>
<td>487</td>
<td>1,025</td>
<td>986</td>
<td>1,227</td>
<td>178</td>
<td>355</td>
<td>-380</td>
</tr>
<tr>
<td>2002</td>
<td>-852</td>
<td>495</td>
<td>1,347</td>
<td>1,062</td>
<td>1,169</td>
<td>218</td>
<td>76</td>
<td>-40</td>
</tr>
<tr>
<td>2003</td>
<td>-890</td>
<td>569</td>
<td>1,459</td>
<td>1,262</td>
<td>1,215</td>
<td>322</td>
<td>200</td>
<td>-78</td>
</tr>
</tbody>
</table>

Scenario with 10 percent decline in tourist receipts and FDI inflows

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Account Balance</th>
<th>Debt Amortization</th>
<th>Gross Financing Requirement</th>
<th>International Reserves</th>
<th>FDI Disburs.</th>
<th>Change in Reserves</th>
<th>Net Financing Requirement</th>
<th>Net Financing including change in reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>-1,152</td>
<td>495</td>
<td>1,647</td>
<td>1,062</td>
<td>1,052</td>
<td>218</td>
<td>76</td>
<td>377</td>
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<tr>
<td>2003</td>
<td>-1,210</td>
<td>569</td>
<td>1,779</td>
<td>1,262</td>
<td>1,094</td>
<td>322</td>
<td>200</td>
<td>364</td>
</tr>
</tbody>
</table>

Note: In late September 2001, the Government completed a US$500 million five-year sovereign bond issue.
needs, even after allowing for some increase in reserves, are US$36 million in 2002 and US$122 million in 2003.

Potential shocks to the balance of payments could be a decline in tourist receipts, which were on the order of US$2.7 billion in 2001 and are expected to be US$2.8 billion in 2002. However, the industry appears to be doing quite well and indications are that the expected receipts will be realized. Similarly, FDI inflows also are holding up quite well, and so are unlikely to be substantially below expectations.

Given that major shocks are unlikely, we considered the combination of a 10 percent decline in expected tourist receipts and a 10 percent decline in expected FDI inflows (see Table 7). Given the need to increase reserves, this scenario leaves a financing gap of, on average, US$500 million for each of the years 2002 and 2003. In this case, the country would have to consider accessing the international financial market with fresh issues of sovereign bonds. In light of the positive experience with the first issue, one can reasonably assume that demand for foreign exchange will be easily satisfied, given the high level of acceptance of Dominican Republic bonds by international investors owing to its stable and growth-oriented macroeconomic performance.

**Spillover Effects**

The Dominican Republic’s main trading partners are the United States and Europe. The main foreign-exchange earners are telecommunications, tourism, and free trade zones. It is therefore unlikely that changes in REER or trade competitiveness in Argentina or Brazil or secondary changes in other LAC countries will affect the Dominican Republic to any significant degree.
Argentina EMBI with Brazil and Mexico EMBI Spreads, and Brazil with Mexico EMBI Spread
(60-day correlation window of first differences – 10-day moving average)

FIG. A1: BIVARIATE CORRELATIONS

Argentina - Brazil
Argentina - Mexico
Brazil - Mexico
FIG. A2: BIVARIATE CORRELATIONS

Argentina EMBI with Peru and Venezuela EMBI Spreads, and Argentina with Colombia Eurobond Spread
(60-day correlation window of first differences – 10-day moving average)
FIG. A3: BIVARIATE CORRELATIONS

Argentina EMBI with Panama and Ecuador EMBI Spreads, and with Chile EMBI Global Spread
(60-day correlation window of first differences – 10-day moving average)
Argentina EMBI Spread and Nominal Exchange Rate Correlations
(60-day correlation window of first differences – 10-day moving average)

FIG. A4: BIVARIATE CORRELATIONS

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Argentina - Brazilian Real
Argentina - Chilean Peso
Argentina - Mexican Peso
FIG. A5: BIVARIATE CORRELATIONS

Argentina EMBI Spread and Nominal Exchange Rate Correlations
(60-day correlation window of first differences – 10-day moving average)
Fig. A6: Bivariate Correlations

Argentina EMBI Spread and Nominal Exchange Rate Correlations
(60-day correlation window of first differences – 10-day moving average)
Brazil EMBI with Peru and Venezuela EMBI Spread, and Brazil with Colombia LEI Spread
(60-day correlation window of first differences – 10-day moving average)
FIG. A8: BIVARIATE CORRELATIONS

Argentina EMBI with Panama and Ecuador EMBI Spreads, and with Chile EMBI Global Spread
(60-day correlation window of first differences – 10-day moving average)
Brazil EMBI Spread and Argentina, Chile and Mexico Nominal Exchange Rates
(60-day correlation window of first differences – 10-day moving average)

FIG. A9: BIVARIATE CORRELATIONS

Brazil - Argentine Peso
Brazil - Chilean Peso
Brazil - Mexican Peso
FIG. A10: BIVARIATE CORRELATIONS

Brazil EMBI Spread and Colombia and Venezuela Nominal Exchange Rates
(60-day correlation window of first differences – 10-day moving average)

--- Brazil - Colombian Peso ----- Brazil - Venezuelan Bolivar
Brazil EMBI Spread and Peru and Uruguay Nominal Exchange Rates
(60-day correlation window of first differences – 10-day moving average)
FIG. A12: EMBI AND EUROBOND SPREADS

**JP Morgan EMBI+**

- **Latin Aggregate**
- **Non-Latin Aggregate**

**Latin Aggregate**

**Argentina**

**Ecuador**

**Colombia**

**Mexico**

**Brazil**
FIG. A12: EMBI AND EUROBOND SPREADS (Continued)

**JP Morgan EMBI+**

- Panama
- Peru
- Venezuela

**JP Morgan Latin Eurobond Index**

- Argentina

**JP Morgan Latin Eurobond Index**

- Brazil
- Mexico
- Colombia
Fig. A12: EMBI and Eurobond Spreads (Continued)
FIG. A13: STOCK MARKET PRICE INDICES
FIG. A14: NOMINAL EXCHANGE RATES IN LATIN AMERICA
FIG. A15: SPEARMAN RANK VERSUS PEARSON’S CORRELATION