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**EXCHANGE RATE CRISES AND BILATERAL
TRADE FLOWS IN LATIN AMERICA**

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EXCHANGE RATE CRISES AND BILATERAL TRADE FLOWS IN LATIN AMERICA

Abstract

This paper looks at the behavior of trade flows in eight countries in Latin America that experienced an extreme nominal exchange rate depreciation. The composition of trade flows shows a very persistent pattern around these episodes of large exchange rate movements. Both the industry composition of trade and the country composition of trading partners remain stable after the devaluation occurs. The relative importance of export and import industries in the countries' trade flows does not vary substantially, nor does the importance of the different source countries for imports and destination countries for exports. Exports to industrialized countries are especially sensitive to changes in the real exchange rate, while bilateral import flows do not show much reaction to changes in bilateral exchange rates.

Keywords: Trade flows, bilateral trade, exchange rate, devaluation, Latin America.

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EXCHANGE RATE CRISES AND BILATERAL TRADE FLOWS IN LATIN AMERICA

1. Introduction

The purpose of this study is to look at the effects that large nominal and real exchange rate devaluations have on the structure of trade flows of the devaluating country. Large exchange rate movements have dramatic effects on the relative prices of tradable and nontradable products as well as on the relative price of domestically produced goods and imports and exports in world markets. Therefore, we would expect a large exchange rate devaluation to stimulate exports, lead to substitution of domestically produced goods by imported products, and restructure the country composition of trade flows, depending on the bilateral effective exchange rate devaluation that takes place.

The standard argument behind the industry adjustment of trade flows to a nominal exchange rate movement goes as follows. A large nominal exchange rate depreciation usually implies a real exchange rate depreciation, at least to the extent that relative prices do not adjust by the same amount as the nominal exchange rate. This real depreciation in turn implies an increase in the price of imported products and a decrease in the world price of domestically produced products. This change in relative prices implies an excess demand for export-oriented goods, which should result in an increase in exports and a decrease in import competing goods.

This argument, as stated, implies that the price sensitivity of demand as well as the supply elasticity to relative price changes is quite high. To the extent that bilateral real exchange rate movements do not imply large changes in quantities consumed and produced (measured by trade flows), then the stated effect of a nominal devaluation may not be present.

This study will look at the behavior of trade flows (imports and exports) around periods of large nominal exchange rate devaluation in a sample of Latin American countries. We will focus on the behavior of three indicators of external activity of the devaluating country: changes in the industry composition of trade flows; changes in the country composition of trade flows; and changes in the aggregate and bilateral trade flows of the country during this period. We will also provide some estimates of the sensitivity of bilateral imports and exports to exchange rate movements.

The results point to three main conclusions. First, there is a strong persistence in the relative ranking of import and export industries and trading partners. In most cases large nominal exchange rate devaluations imply neither major changes in the industry patterns of imports and exports into the country, nor major changes in the relative importance of the major trading partners. Second, after an exchange rate devaluation occurs, the devaluating country increases on average its trade flows with neighboring countries. Third, bilateral export flows with industrialized countries are most sensitive to real exchange rate movements. A real exchange rate depreciation significantly increases the amount of exports from the devaluating country to these countries.

The rest of the paper is organized as follows. In the next section the methodology used for determining the sample and the data are explained. Sections 3 and 4 describe the changes in the industry and country composition of trade flows. Sections 5 and 6 discuss the behavior of bilateral trade flows around these episodes. Finally, Section 7 concludes.

2. Methodology

We have identified a sample of Latin American countries that have experienced an exchange rate crisis since 1989. The definition of what constitutes an exchange rate crisis differs depending on the purpose of the study. Given our emphasis on the effects on trade flows, we focus on persistent nominal exchange rate devaluations (1). By “persistent” we mean exchange rate devaluations that last longer than a year (measured using annual data) and that imply a large nominal devaluation in the country’s currency. We first identified as a “large” devaluation any annual change in the exchange rate that is significantly larger than the previous history of devaluations in the country. The reason for making the definition of a large devaluation country-specific is the existence of periods of high inflation in certain countries during this period. The behavior of the nominal exchange rate in the different countries of Latin America has been extremely diverse, with long periods of large nominal exchange rate depreciations due to very high domestic inflation rates and other periods of fixed nominal exchange rates (see Table 1). Consequently, for the purpose of this study, we define an exchange rate crisis as any significant change in the annual rate of nominal depreciation of a country’s currency. Based on this method, we have identified twelve events of exchange rate crisis that will be the basis for this study (see Table 2).

A first look at the time series behavior of the nominal exchange rates of the different countries during the episodes indicated in Table 2 suggests two salient facts. First, for certain countries (Argentina 1989, Brazil 1994) the nominal exchange rate devaluation that constitutes the event comes after a period of several years of already large nominal exchange rate depreciations. For other countries (El Salvador 1990, Honduras 1990, Mexico 1995) the nominal devaluation comes after a period of very stable nominal exchange rates (2). Second, the dating of our devaluation episodes does not necessarily coincide with the exact episode of the devaluation (most notably Mexico, which we identify as having undergone a crisis in 1995, whereas the peso devalued in the last quarter of 1994). This is due to our using as a measure of exchange rates the annual period averages rather than their end-of-period values. This choice of measure is supported by two facts. The available data for trade flows are

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- (1) Other indexes of exchange rate crises such as Kaminsky and Reinhart (1998) also look at other indicators of pressure on the foreign exchange market, such as changes in reserves or black-market premiums in foreign exchange markets.
 - (2) The Appendix summarizes the most salient factors driving these countries’ political and economic situation as well as their exchange rate policies around the date of the events.

annual values which correspond to all trade flows during that period; and, secondly, trade flows are more likely to be responsive to large persistent exchange rate movements than to exchange rate changes that are quickly reversed.

Large nominal exchange rate changes affect the behavior of trade flows through their impact on the relative prices of tradable goods in the economy. A change in the nominal exchange rate affects the prices of export and import goods relative to domestically produced goods, which implies changes in the real exchange rate. We would expect trade flows to be responsive to changes in a country's real exchange rate. During the episodes under study, the nominal exchange rate changes translated into large real exchange rate changes. However, those changes in the real exchange rate were not homogeneous, depending on the historical behavior of nominal exchange rates in the country. The third column of Table 2 reports the rate of real exchange rate depreciation of the home currency during the two-year period going from the beginning of the year in which the nominal exchange rate crisis took place to the end of the following year. There is a striking difference, as regards the behavior of the real exchange rate, between the two sets of countries indicated above. In Brazil, Peru, and Argentina home currency goods became more expensive during this episode, due to an even higher domestic inflation rate. For the remaining countries large nominal exchange rate devaluations were transmitted into real exchange rate devaluations. The last column of Table 2 reports the real exchange rate depreciation five years after the devaluation. With the notable exception of Brazil and Argentina, all countries had experienced a relative convergence to their initial long-term real exchange rates, with rates of real depreciation much lower than those they had experienced only two years after the devaluation. In Brazil the five-year period ended just after the large real depreciation resulting from the collapse of the Real Plan in February of 1999 and some of this depreciation was corrected shortly after that.

The purpose of this study is to look at the behavior of trade patterns resulting from the currency devaluation. We will describe the behavior of trade patterns in the medium run resulting from the devaluation. The adjustment of trade flows to their new equilibrium level does not happen immediately. Exporters and importers need to identify new markets for their products, establish relationships, and develop sales and distribution networks that allow them to find substitutes for their current international partners. Therefore, our emphasis here will be on the medium-run changes in trade patterns. We will describe the changes in the pattern of trade by comparing the industry and country trade patterns of the devaluing country in two different time periods. The average of trade flows in years $t-3$ and $t-4$ will describe the situation prior to the devaluation. The average of trade patterns observed in years $t+3$ and $t+4$ will be our indicator of trade patterns after the devaluation, where t refers to the year in which the devaluation took place.

There is an extensive literature looking at the effects that large exchange rate devaluations have on the economic activity of the devaluing country. This literature has generally focused on two different lines of research: 1) trying to identify the macroeconomic situation of the country that leads to a devaluation and how such a situation can be prevented; and 2) trying to describe the optimal policy prescription to overcome the negative effects of the devaluation. The literature on currency crises has focused primarily on the first part, with the initial work by Krugman (1978) on balance of payments crises, followed by many more models that try to endogenize the policy decisions facing a government confronting a speculative attack (see the work of Obstfeld, 1996, for a review; Calvo, 1995; or the more recent work of Lahiri and Vegh, 2000; and Chang and Velasco, 1999). Another strand of this literature has focused on developing indicators for predicting these currency crises (Lizondo, Kaminsky and Reinhart, 1998) or identifying the transmission of these crises internationally (Glick and Rose, 1999; Eichengreen, Rose and Wyplosz, 1996).

Most of this work has focused on the macroeconomic issues and the policy adjustment countries should pursue in response to devaluation. There has been much less work focused on the microeconomic implications of devaluation and the effects of the changes on industry composition and a country's bilateral trading behavior. Since the work of Edwards (1989) there has been no systematic analysis of the effects of large exchange rate devaluations on the industry composition of trade flows in developing countries. Some recent studies have focused on the importance of trade flows as a mechanism for the transmission of international currency crises. Glick and Rose (1999) show that trade flows are one of the most important channels through which exchange rate crises are transmitted internationally. In the context of developed countries, exchange rate movements have been shown to affect a country's industrial structure by stimulating investment, employment and wages in more export-oriented industries. There is also increasing evidence, for industrialized countries, that industries differ in their ability to adjust the foreign currency price of their exports in response to a home currency depreciation. This degree of exchange rate passthrough into final good prices has been shown to depend on the size of the market and the industry characteristics of the products (Goldberg and Knetter, 1997; Yang, 1997). However, there has not been much work on the evolution of a country's bilateral flows resulting from a devaluation. That is the gap in the literature that this study will address.

3. Changes in the industry composition of trade flows

Large exchange rate changes affect the economy through changes in the relative prices of goods in the economy. A nominal devaluation often transforms itself into a real devaluation, meaning that domestically produced goods are now cheaper relative to foreign produced goods, thus increasing the attractiveness of domestically produced goods abroad. These changes in the relative prices of goods might lead to significant changes in the composition of a country's export flows. In a world of integrated international markets for goods a country's export and import patterns are determined by the law of comparative advantage. Changes in the relative prices of goods due to large devaluations of the home currency can lead a country to change the industry composition of goods in the economy in which it has a comparative advantage.

To look at the changes in the industry composition of a country's trade flows, we looked at the industry pattern of trade 3 to 5 years prior to the devaluation and compared it with the industry composition of trade flows 3 to 5 years after the devaluation. We excluded the years close to the devaluation date for two reasons: 1) we wanted industry adjustment and trade flows to have sufficient time to adjust to the new equilibrium; 2) we wanted to minimize the impact that differences in the timing of the devaluation within the year could have on our observations, given that we were working with annual data.

The composition of trade flows shows a large degree of persistence across the countries in our sample. In Table 3 we report summary statistics for the persistence of industry trade flows using three different measures. First, we look at the highest level of industry aggregation (the 1-digit industry classification of trade flows) and examine the correlation among the ranking of industries according to their share of the country's total trade value before and after the devaluation. The correlation among the industry rankings is extremely high (not reported but always above 0.8). As an indication, the first two columns show how many of the top five industries by trade value prior to the devaluation were also among the top five industries after the devaluation. In most cases, at least four of the top five export and import industries were still at the top after the devaluation. Only in El Salvador

and Peru were fewer than four of the top five export industries prior to the devaluation still among the top five after the devaluation. This same pattern appears even when more disaggregated industry definitions are used. In the following columns of Table 3 we report a similar result using the 2-digit industry classification rather than the 1-digit, and looking at the top 5 and top 20 export and import industries in the country. Again the degree of persistence in industry trade flows is very high. Even at this more disaggregated industry level, 17 of the top 20 industries prior to the devaluation are still in the top 20 after the devaluation. There is, at any point in time, slightly more variation among the top 5 industries using the 2-digit classification, but the persistence among the top 20 is extremely robust. Finally, for completeness, we report the correlation of industries at the 2-digit level before and after the devaluation, ranked by the value of their trade flows. The correlation of industry export and import patterns is very high. It is especially high for the two large countries that devalued their currencies in the 1990s, Brazil and Mexico. This suggests that the trade adjustment suffered by these countries was somewhat smaller.

This persistence in the industry composition of trade flows might not seem all that surprising, given that, after all, any country will have comparative advantages in a certain range of products, and this comparative advantage is likely to be determined by factor endowments, technology, location and other factors apart from exchange rates. However, we might expect changes in the exchange rate to affect the relative importance of each of these top industries in the country's overall trade. To get a better understanding of this effect, in the third and fourth column of Table 3 we report the standard deviation of the changes in the share of each 1-digit industry in the country's total trade before and after the devaluation. As a benchmark for interpretation, remember that, because we are looking at 10 industries, the average industry share is 0.1. (3) The median of these standard deviations across countries for import and export industries is 0.046. This suggests that 60% of the changes in the relative trade shares of the industries were smaller than 5% of the country's overall trade, or to put it another way, that the average change in the share of trade flows for 1-digit industries was smaller than 50% of their pre-devaluation share. This result suggests that devaluation has not led to tremendous shifts in the industry composition of trade flows in these countries. However, significant differences can be observed between the countries in the sample. For the three large countries (Brazil, Mexico and Argentina) in the sample, changes in the industry composition of imports were more important than changes in the industry composition of exports, while for the smaller countries the opposite was the case. Also, the average size adjustment for imports was larger in the large countries than in the smaller countries.

4. Changes in the country composition of trade flows

We performed a similar analysis of the composition of trade flows by trading partner. Insofar as the devaluation is a shock specific to the devaluating country, it should not affect the relative price of goods from different partner countries. The relative prices of foreign goods could change due to other effects such as differences in the industry composition of trade flows, as suggested above, or differences in the market structure of the different countries. To the extent that market structure differs, the degree of industry passthrough of the exchange rate prices into final goods prices might differ and this might

(3) This number should be used only as a rough approximation, since the distribution of industry shares in total trade is highly skewed.

result in changes in the relative prices of the goods from different partner countries. To analyze the size and importance of this effect, we computed bilateral real exchange rates for each of the top 10 trading partners, using consumer price indexes. We then looked at the decomposition of these bilateral exchange rates and observed that the correlation among these bilateral exchange rates was very high. The correlation for these bilateral exchange rates between the devaluating country and all of its trading partners was always in the interval 0.51 to 0.94, with an average correlation across all of the devaluating countries of 0.863 (4). Given this high correlation at the aggregate country level, we should not expect large changes in overall relative prices between partner countries, although some large differences at the industry level might remain hidden at this level of aggregation.

In Table 4 we report the results of an analysis similar to that performed for the industry composition of trade flows. For each devaluating country, we report the persistence in the ranking of its trading partners. The persistence of export and import trading partners is very high. On average 18 of the top 20 partner countries prior to the devaluation remain among the top 20 trading partners after the devaluation. There is slightly more persistence in the set of importing countries than in the set of exporting countries in the sample. There is a fair amount of variation among the top 5 trading partners in the sample. On average only 3 of the top 5 countries remain among the top 5 trading partners in the sample. Note, however, that this may not necessarily be due to the devaluation. Changes in the relative prices of traded goods among the different trading partners and changes in the prices of one traded good relative to another traded good, due to fluctuations in world markets, may also result in changes in the relative importance of each trading partner. Finally, we looked at the standard deviation of changes in the share of each of the top 20 partner countries. The median standard deviation for the changes in trade share of each country is 0.011. In 60% of cases the partner countries' share of total trade changes by less than 1 percent of the country's total trade. This suggests that the behavior of relative trade flows is extremely persistent across the different trading partners.

We also looked at changes in the relative importance of trading partners by their total trading value. The Spearman rank correlation measure of the evolution of trading partners was found to be always greater than 0.5 and fairly stable across countries. Devaluating countries continue to trade primarily with their existing trading partners. There are no significant differences between the behavior of export and import patterns. There is, however, a substantial difference when we compare these values to those of the changes in the industry composition of trade flows. There is more persistence in the ranking of industry compositions than in the ranking of trading partners. This suggests that devaluation tends to change the country composition of trade flows more than the industry composition of those flows. This statistic does not provide any information about the behavior of the absolute volume of bilateral trade flows in a country. We shall now proceed to analyse these aggregate flows.

5. The behavior of aggregate and bilateral trade flows

Table 5 reports the aggregate behavior of total import and export values (measured in USD) for the countries in the sample during the period 1986-1999. In all cases, we observe

(4) We are in the process of computing industry-specific bilateral exchange rates using as price indexes the unit values of export and import for the different industries, for the countries for which data on trade volume and trade value is available.

a positive trend in the behavior of trade flows during this period, resulting from the increased openness of these economies to international markets. There is a striking difference between the behavior of export and import volumes around the devaluation episodes. Exports tend, on average, to increase in the year of the devaluation and the following two years. Only in Argentina, Peru and Venezuela do we observe negative export growth in the second year after the devaluation, and this probably has more to do with the circumstances in world markets at that time, especially in the United States. In all other cases, exports continue to increase. There is a marked difference between the first and second and third years. In most cases we observe one or two years of double-digit export growth, followed by a further one or two years in which the growth of exports declines substantially. Import volume, in contrast, behaves quite differently. In most of the devaluation episodes (five out of eight), import volume contracted; only in the two devaluations by large countries in the mid 1990s (Mexico and Brazil) was there substantial positive import growth. In all other cases, the import contraction was short-lived. Import growth started to pick up in all countries by the second year after the devaluation, and in most cases the rate of growth of imports was substantially higher than before the devaluation.

We also looked at the effect of the devaluation on the composition of bilateral trade flows by major trading partner. Table 6 reports, for each country, the evolution of imports and exports to and from the 20 major trading partners. In each column we show the rate of growth of trade volumes from the trade flows over the years $t-2$ to $t-3$, to the trade flows over the period $t+2$ to $t+3$ (where t is the year the devaluation took place). Again we take the average of a two-year period to avoid capturing outlier behavior due to sporadic trading activity during a single year. There are two consistent patterns: 1) except in the case of the larger countries, imports into the country tend to originate from larger, more developed countries; 2) after the devaluation, trade grows more with neighboring countries in Latin America, especially in the case of exports. Exports increase faster than average to countries in the region, and especially towards countries that are partners in regional trading agreements. Brazil and Argentina increased their trading flows with each other significantly, and also with other countries in the region such as Chile and Paraguay. There was also a significant increase in regional trade among Central American countries: Honduras, El Salvador and Guatemala, despite suffering an exchange rate crisis, increased their bilateral trade with one another at a rate significantly above the average of their overall trade growth. The larger countries such as Mexico and Argentina experienced significant increases in exports toward more developed countries such as the United States, France, Netherlands and Spain.

6. The sensitivity of bilateral trade flows to devaluations

We now further analyze the sensitivity of bilateral trade flows to exchange rate devaluations by estimating a model of the reaction of trade flows to exchange rate changes. As we saw in Section 2, large nominal exchange rate depreciations have very different implications for real exchange rate movements. There is also considerable variability in the rate of nominal and real bilateral exchange rate movements, depending on the devaluating country's trading partner. Therefore, we estimate a model of the behavior of bilateral trade flows during the period around the devaluation against the devaluating country. The rates of bilateral depreciation differ greatly, depending on the trading partner. We regress each of the behaviors of each of the bilateral trade flows depicted in Table 6 above against the behavior of the bilateral real and nominal exchange rates.

We estimated the following model of export (import) flows:

$$\%TF_{ij,t} = a + b_0 \Delta e_{ij,t} + b_1 * Latin_j + b_2 * ind_j + b_3 * ngr_{ij} + b_4 * (\Delta e_{ij,t} * Latin_j) + b_5 * (\Delta e_{ij,t} * ind_{ij}) + b_6 * (\Delta e_{ij,t} * ngr_{ij})$$

where %TF is the change in bilateral export (import) flows reported in Table 6 above; $\Delta e_{ij,t}$ is the percentage change in the nominal (or real) bilateral exchange rate between country i and j during the two years immediately following the devaluation; and *Latin*, *ind* and *ngr* are dummy variables that take the value of one when the partner country is a Latin American country, an industrialized country, or a country that is either a neighbor of the depreciating country or its partner in a regional trading agreement.

The results of this exercise are shown in Table 7. There is a sharp difference between the behavior of import trade flows and export trade flows. There is no sensitivity of bilateral import flows to exchange rate movements. In all estimated models, the exchange rate variable is never significant. The only factor that seems to matter in determining import sensitivity is the location of the trading partner. Import growth from neighboring countries, or from countries with which the devaluating country has a regional trading agreement, is consistently larger than the growth in imports from other countries (although not statistically significant). An F-test of the hypothesis that all the estimated coefficients are significantly different from zero can only be rejected in the specification in which we include the three dummies of trading partner. In the other two specifications we cannot reject the hypothesis that all coefficients are zero. The second result is the sensibility of export behavior to exchange rate changes, particularly to bilateral real exchange rates. In all cases, higher bilateral depreciations are correlated with larger increases in exports from the devaluating country. This effect is more important for real than for nominal exchange rate movements, both in the statistical and in the economic sense. On average and according to the estimates in row 5 of Table 7, the elasticity of export flows to real exchange rate changes is .08, and highly statistically significant. The third notable result is that the export sensitivity of bilateral export flows to exchange rate changes is much larger for trade flows with industrialized countries. According to the estimates in the last row of the export panel in Table 7, which allows for differential exchange rate responses by industrialized, Latin American and neighboring countries, the real exchange rate elasticity of trade flows is .21, and again highly statistically significant. It is worth noting that the net effect of changes in real exchange rates on trade flows with other Latin American countries is not significant, and that the sum of the coefficients for a country that is a neighbor is basically zero (5).

7. Conclusions

This paper has looked at the behavior of trade flows in a number of cases of countries that experienced an extreme nominal exchange rate depreciation. We have identified eight cases in Latin America of large nominal depreciations of the exchange rate and have looked at the behavior of trade flows around these episodes. We have looked at the persistence of import and export flows in terms of the relative importance of the industry composition of these flows and the sample countries' trading partners. We have also looked

(5) This is the sum of the estimated coefficients on the real exchange rate and the interactions of the real exchange rate with the *Latin* and *ngr* dummies.

at the sensitivity of bilateral trade flows from these countries to the large exchange rate movements.

The composition of trade flows shows a very persistent pattern around these episodes of large exchange rate movements. Both the industry composition of trade and the country composition of trading partners remain stable after the devaluation occurs. The relative importance of export and import industries in the countries' trade flows does not vary substantially, nor does the importance of the different source countries for imports and destination countries for exports. Exports to industrialized countries are especially sensitive to changes in the real exchange rate, while bilateral import flows do not show much reaction to changes in the bilateral exchange rates. Our estimates suggest that exports from these countries to industrialized countries have an average elasticity to real exchange rate movements of 0.21.

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Appendix

Brief summary of the economic situation of the countries included in the study (6)**Peru, 1990***Political situation*

Peruvians concerned about the economic situation, the increasing terrorist threat from Sendero Luminoso, and allegations of official corruption chose Alberto Fujimori, a relatively unknown mathematician-turned-politician, as president in 1990.

The Fujimori government reduced the terrorist threat of Shining Path (SL) and the MRTA. The capture or death of several remaining terrorist leaders marked continuing progress in eliminating the once great threat posed by the SL and MRTA terrorist organizations, who since 1990 had committed the great majority of killings and human rights abuses

Following an April 5, 1992 coup, President Fujimori dissolved the legislature, removed many judges and prosecutors appointed by the previous government, suspended portions of the 1979 Constitution, and began to rule by decree.

As a result, economic assistance was suspended by the U.S. and some other donors. The elections for the new Constituent Congress held November 22, 1992 were, however, judged fair by international observers. The new Constituent Congress, in which President Fujimori's supporters held a strong majority, drafted a new constitution that was narrowly approved by popular referendum on October 31, 1993.

Economic situation

On July 28, 1990, President Fujimori inherited a country in arrears to foreign lenders, with no international reserves, and a heavily regulated economy with distorted relative prices. The economy was in deep recession, with GDP down 23 percent over the 1988-90 period. Extreme economic mismanagement by the Garcia administration led to hyperinflation from 1988 to 1990.

Fujimori implemented drastic orthodox measures as part of a structural adjustment program. This program included trade liberalization, elimination of price controls so as to bring relative prices into line, liberalization of the investment and foreign exchange regimes, and a reduction in the size of the public sector. The goal of the structural adjustment program was to reduce inflation to manageable levels and create conditions for sustained economic growth. The program succeeded in bringing inflation down from 7,650% in 1990 to 139% in 1991

(6) This is a partial summary of the economic situation of these countries taken from Country Reports of the IMF, the World Bank, and the U.S. Department of State.

Appendix (continued)

The stress of structural adjustment, including austere monetary and fiscal policies, contributed to a severe recession in 1992, exacerbated by drought and difficult fishing conditions created by the “El Nino” weather phenomenon, with a small recovery of the fishing and agricultural industry in 1993.

In March 1993, Peru cleared its arrears with the World Bank (IBRD) and the International Monetary Fund (IMF) for about \$1.8 billion.

Combined with increased mining productivity and new foreign investment due to an improved investment climate and privatization, growth started to revive.

Inflation was reduced to the lowest monthly level in 17 years.

Exchange Rate Policy

The Fujimori government liberalized the exchange rate regime, eliminating multiple rates and other distortionary policies. This liberalization was further supported in the new constitution, which guaranteed free access to and free disposition of foreign currency. No restrictions existed on the purchase, use or remittance of foreign exchange. Exporters were not required to channel their foreign exchange transactions through the Central Bank; they could conduct their transactions freely on the open market

The exchange rate was determined by market forces, with some intervention by the Central Bank to stabilize movements. The government’s ability to manage monetary aggregates was limited, however, by the increasing “dollarization” of the Peruvian economy. Without capital and exchange controls, U.S. dollars accounted in 1993 for over 70 percent of the liquidity in the economy.

Honduras, 1990***Political situation***

In January 1990, President Callejas took office as the new president. A member of the National Party, he ruled the country for four years and implemented an aggressive program of economic reforms. This program stabilized the economy but failed to bring stable economic growth, partly due to negative terms of trade and shocks from world markets. As a result of the poor economic performance, the government lost popular support. In the next elections, held in November 1993, President Carlos Roberto Reina of the Liberal Party was elected by a wide margin. He had been critical of the economic program and promised to put a more human face on government policies. He took office on January 27, 1994.

Economic situation and structural policies

The newly elected government of President Callejas, faced a deteriorating economic situation. Moving quickly to confront the crisis, Callejas embarked on an ambitious economic

Appendix (continued)

reform program. This program of structural reform involved dismantling much of Honduras' elaborate system of price controls, opening up the economy to foreign competition by dramatically lowering import tariff duties and removing most non-tariff barriers to trade, and adopting a free market exchange rate regime. The program also involved adopting a package to reduce fiscal expenditure and increase revenues so as to balance the fiscal budget. The deficit reduction measures included increasing sales tax, simplifying the income tax structure, removing a number of tax and duty exemptions, improving tax collections, increasing some public utility rates, and raising oil prices. This deficit reduction program bore fruit, with the fiscal deficit, as a percent of GDP, declining from 7.1 at the end of 1990 to 4.3 percent in 1991.

During the 1990s, the Honduran economy was hit by declining world prices for its traditional exports of bananas and coffee. The unfavorable terms of trade, high external debt levels, and flawed economic policies seemed to doom Honduras to a decade of low growth rates and declining living standards.

Exchange rate policy

Honduras had followed a nominal fixed-exchange rate policy for most of the 1980s. This policy was supported by an increasingly complex system of price controls and restrictions on capital flows. The Honduran government abandoned the fixed exchange rate system and gradually moved to a flexible exchange rate mechanism in 1990. From 1990, the Honduran Central Bank adopted restrictive monetary and credit policies. Interest rate ceilings on commercial bank loans were gradually removed in 1990-91, and the Central Bank increased the rate charged to commercial banks for reserve shortfalls. These measures led to a rise in deposit rates and restored equilibrium to the credit markets. They allowed for a transition to a floating exchange rate regime in June 1992.

To provide a more transparent and efficient foreign exchange market, the Honduran Central Bank legalized and licensed the operations of Foreign Exchange Trading Houses (Casas de Cambio), which until then had been black market establishments. As of June 1993, there were 15 licensed Foreign Exchange Houses actively competing in this market nationwide. In 1992 the Central Bank authorized commercial banks to operate foreign exchange trading desks and compete with exchange houses. In July 1992, a major speculative run on the lempira prompted the Central Bank to adopt a series of restrictive monetary measures in support of the exchange rate.

El Salvador, 1990***Political situation***

President Alfredo Cristiani took office in 1989. In June of that year, President Cristiani called for direct dialogue to end the decade of conflict between the government and the FMLN guerrilla. An unmediated dialogue process was initiated in September 1989, lasting until the FMLN launched a bloody, nationwide offensive in November of that year. In

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early 1990, following a request from a group of Central American presidents, the United Nations became involved in an effort to mediate direct talks between the two sides.

On December 31, 1991, the government and the FMLN initialed a peace agreement that led to the signing of a final agreement in Mexico City, called the Accords of Chapultepec, on January 16, 1992. A 9-month cease-fire took effect February 1, 1992, and was never broken. A ceremony held on December 15, 1992, marked the official end of the conflict.

Economic situation

El Salvador turned decisively toward market-oriented economic policies in the four years following the election of President Cristiani. The government sharply reduced the high tariff barriers (with duties of up to 240 percent on some items) and created a new system in which most duties fell in a range of five to twenty percent. Non-tariff barriers and import licensing also were almost totally abolished. Internal price controls on 240 consumer goods were dismantled. The Government also dismantled its agricultural monopolies, privatized the banking system, gradually removed interest rate controls and internal price controls, and privatized a number of the utility and communication firms operating in the country.

Fiscal policy was the biggest challenge facing the Cristiani government. The peace accords signed with the FMLN in December 1991 committed the government to heavy expenditures for transition programs and social services. A mixture of foreign aid, debt forgiveness by the U.S. and new credits from international financial institutions allowed El Salvador to experience four years of continuous growth.

Exchange rate policy

A multiple exchange rate regime that was used to conserve foreign exchange and as an attempt to fix the nominal exchange rate was phased out during 1990 and replaced by a free-floating rate. On several occasions, the Central Bank intervened in the exchange market to moderate speculative pressures and soften exchange rate fluctuations. El Salvador's net international reserves increased impressively during this period. This increase in reserves was due to the improved prospects for continuous growth as well as the prospects of peace in the country.

Mexico, 1994***Political situation***

In January 1994, insurgents in the state of Chiapas took up arms against the government, protesting oppression and governmental indifference to poverty. After 12 days of fighting, a cease-fire was negotiated. This political turmoil, aggravated by the murder, also in 1994, of the Institutional Revolutionary Party (PRI) candidate for the Presidency, Luis

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Donaldo Colosio, at a rally in front of hundreds of supporters, led to an increase in political uncertainty surrounding the results of the upcoming elections. Yet the PRI, which had ruled Mexico for 70 years, found a way to mend its internal rifts and, with the power of the party's formidable electoral machinery, its candidate won the presidential election. His main rival in the race was Vicente Fox, the candidate for the center-right National Action Party (PAN), who became president in the next elections.

Economic situation

The government of President Salinas, during the early 1990s, followed policies of economic liberalization, through the opening up of the economy to international transactions and the privatization and deregulation of heavily state-controlled industries. From 1986 the Mexican government privatized or eliminated more than 1000 state-controlled companies. Privatizations during the Salinas administration included commercial banks, airlines, steel production, the telephone company, a television network and several major industrial facilities.

The defining event of the Salinas administration was the signing of the North American Free Trade Agreement (NAFTA), which came into force in January 1994 and allowed for free trade between the United States, Canada and Mexico. The agreement provided for the progressive elimination of tariffs, nontariff barriers, and quotas for merchandise trade; the gradual opening of the Mexican central government procurement and construction contracts to bidding by U.S. and Canadian firms; and the establishment of clear dispute resolution and international arbitration procedures to provide protection to U.S. and Canadian investors in Mexico. Through 1994, an increase in capital outflows out of Mexico, fuelled by the political uncertainty surrounding the elections and by the appreciated Mexican peso, led to a decrease in the amount of foreign reserves held by the Central Bank, and to the devaluation of the Mexican peso in December 1994.

In response to the December 1994 economic crisis (which plunged Mexico into its worst recession in 60 years), the Mexican government instituted tight fiscal and monetary policies.

Exchange rate policy

On December 22, 1994, Mexico abandoned its exchange band mechanism, which had been in place since November 1991, in favor of a free floating exchange rate. The peso continued to float freely, with only infrequent interventions by the Bank of Mexico (Mexico's central bank). The surprise devaluation by the Bank of Mexico led to a large capital outflow from the country, which resulted in a large nominal depreciation of the Mexican peso. In 1995, the Bank of Mexico intervened three times to stabilize the peso in the face of extreme volatility generated by rumors and/or trader speculation. This depreciation, in turn, resulted in an economic recession as the relative prices of imported goods rose and exports became increasingly more competitive. The Mexican economy recovered quite rapidly from the economic crisis due to the depreciation.

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By 1996 Mexico had achieved the objectives set in the emergency program developed to cope with the crisis deriving from the devaluation. The retirement of the \$29 billion in short-term dollar-denominated notes (“tesobonos”) outstanding at the end of 1994, the early repayment to the U.S. Treasury of the \$7 billion loan extended to Mexico during 1995, and the placement of over \$24 billion in international capital markets were among the most telling events of the Mexican economic recovery.

Venezuela, 1989

Political and economic situation

The government of Jaime Lusinchi (president, 1984-89) attempted to reverse the 1983 economic crisis through a combination of currency devaluation, the establishment of a multi-tier exchange-rate system, greater import protection, increased attention to agriculture and food self-sufficiency, and the generous use of producer and consumer subsidies. These 1983 reforms stimulated a recovery from the negative growth rates of the early 1980s and led to modest growth from 1985 to 1988.

By 1989, however, the economy could no longer support the high rates of subsidies and the increasing foreign debt burden, particularly in light of the nearly 50 percent reduction, during 1986, of the price of oil, which represented over 80% of Venezuelan exports.

In 1989 the administration of President Carlos Andrés Pérez launched policy reforms with the support of structural adjustment loans from the International Monetary Fund and the World Bank. In February of that year, price increases directly related to these reforms caused several days of rioting and looting that left hundreds dead in the country’s worst violence since its return to democracy in 1958. This political turmoil culminated in February 1992, when a group of army lieutenant colonels led by future President Hugo Chavez mounted an unsuccessful coup attempt, claiming that the events of 1989 showed that the political system no longer served the interests of the people. A year later, Congress impeached Pérez on corruption charges. Deep popular dissatisfaction with the traditional political parties, income disparities, and economic difficulties were some of the major frustrations expressed by Venezuelans following Pérez’s impeachment.

Exchange rate policy

The most fundamental of the 1989 adjustments was the massive devaluation of the bolivar from its highly overvalued rate to a market rate. This devaluation unified all exchange rates from the official B14=US\$1 rate to the new B36=US\$1 rate, which was a floating rate subject to the supply and demand of the market. By late 1990, the value of the bolivar had crept down to B43=US\$1.

In a related matter, the Differential Exchange System Office (Régimen de Cambio de Dinero—Recadi), the organization that oversaw the various exchange rates, became the

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focus of one of the biggest scandals of the decade. Between 1983 and 1988, businessmen bribed Recadi officials in return for access to halfpriced United States dollars to funnel an alleged US\$8 billion overseas. When the scandal broke in 1989, law enforcement agents investigated as many as 2,800 businesses and more than 100 executives from leading multinational enterprises fled the country in fear of prosecution.

Guatemala, 1990*Political situation*

In January 1986, President Cerezo's civilian government announced that its top priorities would be to end the political violence and establish the rule of law. Reforms included new laws of habeas corpus and "*amparo*" (court-ordered protection), the creation of a legislative human rights committee, and the establishment in 1987 of the Office of the Human Rights Ombudsman. With Cerezo's election, the military moved away from governing and returned to the more traditional role of providing internal security, specifically by fighting armed insurgents. Dissatisfied military personnel made two coup attempts in May 1988 and May 1989, but were unsuccessful due to the support by the military leadership of the constitutional order.

The final 2 years of Cerezo's government also were marked by a failing economy, strikes, protests, and allegations of widespread corruption. The government's inability to deal with many of the nation's problems (such as infant mortality, illiteracy, deficient health and social services, and rising levels of violence) contributed to popular discontent. New presidential and congressional elections on November 11, 1990 led to the appointment as President of Jorge Serrano, leader of a weak coalition between his own party (Movement of Solidarity Action), the Christian Democrats and the National Union of the Center. The Serrano administration's record was mixed. It had some success in consolidating civilian control over the army, replacing a number of senior officers and persuading the military to participate in peace talks with the URNG.

He took the politically unpopular step of recognizing the sovereignty of Belize. The Serrano government reversed the economic slide it inherited, reducing inflation and boosting real growth.

Economic situation

The first 2 years of Cerezo's administration were characterized by a stable economy and by a marked decrease in political violence. Economic performance, however, declined during the last two years of his administration, with widespread strikes and allegations of political corruption. In 1990 the new government implemented a program of structural reforms, with strict controls on monetary policy and fiscal expenditures. Beginning in 1991, Guatemala implemented a policy of zero net credit to the Central Government, which halted the prior tendency to monetize the deficit. By drastically reducing expenditures in 1991, the government successfully reduced the consolidated public sector deficit from 4.7 percent of

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GDP in 1990 to just 1.6 percent in 1991. With the 1992 fiscal reform, the overall deficit fell further to just 0.8 percent. As part of fiscal reform, the government simplified most taxes on businesses operating in Guatemala and reduced tariffs.

Exchange rate policy

Guatemala had a system of fixed nominal exchange rates during the 1980s, with periodic large nominal depreciations. From late 1990, the Bank of Guatemala (BOG) operated an official auction system for foreign exchange. Under this system, foreign exchange could be purchased for any use, subject to availability. Under Guatemalan law, all foreign currency receipts had to be sold to the Bank of Guatemala. The BOG in turn made a set amount of U.S. dollars available to both foreign and domestic bidders in the official auction, which was held each business day. Under this system, the quetzal could depreciate only five centavos every three weeks. The quetzal appreciated about seven percent in real terms in 1991 and 1992.

Brazil, 1993/1994***Political situation***

Brazil completed its transition to a popularly elected government in 1989, when Fernando Collor de Mello won 53% of the vote in the first direct presidential election in 29 years. In 1992, a major corruption scandal led to the impeachment and resignation of President Collor. Vice President Itamar Franco took his place and governed for the remainder of Collor's term. In October 1994, fresh presidential elections resulted in Fernando Henrique Cardoso being elected President, with 54% of the vote. He took office January 1, 1995 and was re-elected in October 1998 for a second 4-year term.

Economic situation

Brazil had been subject to high levels of inflation since the early 1980s, and had unsuccessfully attempted to rein in inflation several times prior to 1994's Real Plan. During the period of military rule prior to 1989, Brazil pursued industrialization policies based on trade protection, import substitution, large state-owned enterprises, and high levels of government spending financed through increases in the amount of money in circulation. By 1990, hyperinflation had been structured into the economy, through both indexation and expectations, with the concomitant debilitating effects. Prior to the Real Plan, several attempts were made to contain inflation, usually involving combinations of wage and price controls, tightening of the money supply, tax hikes, freezing of bank deposits and the introduction of a new currency. These all failed as the fundamental problem lay in expectations of high inflation and excessive government spending.

The Real Plan, introduced in December 1993 by Finance Minister Fernando Henrique Cardoso, differed from the previous plans in that it directly addressed the problem

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of inflationary expectations. Cardoso recognized that past inflation was being transmitted into future expectations by indexing and various contract negotiations, as inflation figured into all wage and business contracts. The idea was to break this connection by creating a unit of transactional account in which price and wage contracts would be negotiated and written, and whose value would be kept roughly equal to \$1. The official currency, the cruzeiro real, would then be devalued against this unit. The Unit was called the Unit of Real Value (URV), and was introduced in March 1994. At the same time, the constitutional links between revenue and expenditure were circumvented by creating a special fund (Fundo Social de Emergencia - FSE) to eliminate the public sector deficit, thereby addressing a fundamental source of inflationary pressure. (The creation of the FSE was necessary to avoid the structural claims guaranteed by the constitution to the states and to entitlement programs.) Other key components of the Plan included: the privatization of state-owned enterprises, the reduction of the fiscal deficit, social security reform, and Constitutional reforms to deregulate the labor market and to relax the excessive protections provided to public workers.

Four months after the introduction of the URV, the Real was introduced. The central bank (Banco Central do Brazil) committed not to permit a depreciation beyond 1.00 Real/\$, though appreciation would be allowed. Furthermore, a reserve ratio was implemented requiring one American dollar to each Real issued. The result of the Real Plan was a reduction in inflation from 50% per month, as of June 1994, to less than 2% per month by the end of the year. Inflation has since then continued to drop, and in May 1998 12-month inflation was 3.12%, its lowest value since November 1949. The Real Plan also had positive effects on the rate of economic activity during this period. Brazil's real GDP grew at an average annual rate of 4.0% during the four-year period 1994-1997, compared with an average annual growth rate of -0.2% during the four years prior to the implementation of the plan.

Exchange rate policy

Exchange rate stabilization was an integral part of the Real Plan. Upper and lower bands ("maxibands") –as indicators of the maximum possible movement up or down– were established in March 1995, at a rate of .93 and .88 Real/\$. While announcing these broader "maxibands," the central bank in practice followed a "crawling peg" system, in which the Real gradually depreciated, but remained within a "miniband" surrounding a depreciating central rate. Under this informal system, the Real's central rate was devalued approximately 0.5%-0.6%/month, and central bank intervention assured that at all times the spot rate did not deviate by more than 0.25% (half the "miniband width") in either direction. In practice, the central rate was devalued discretely by about 0.10% (although sometimes 0.05% or 0.15%) about 5-7 times per month. Starting April 1997, the government started devaluing the central rate by about 0.7% monthly. To discourage speculation against the system, the actual magnitude and timing of these mini-devaluations was kept slightly irregular. Furthermore, the size of the minidevaluation would be smaller than the width of the miniband itself, so the instantaneous direction of the spot rate could not be known with certainty, discouraging "one way" bets.

While this system of a predictable crawling peg surrounded by a miniband provided short-term stability in the spot rate, the government wished to maintain some flexibility over

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longer periods such as several months. To commit to a very narrow range, even one surrounding a crawling peg, risked tying the government's hands unnecessarily and inviting outside speculation against the currency. Thus, the government remained free to alter either the rate of devaluation or the width of the miniband. At the same time, the government also wished to provide some indicative levels for medium-term forecasting. This dual objective was reached by instituting wider "maxibands." Though the exchange rate never technically violated these bands, the central bank adjusted the maxibands as markets gradually approached the maximum Real/\$ exchange rate, an event that has typically occurred every six to twelve months.

Since the original maxibands were implemented in March 1995, the bands were changed on four separate occasions: June 22, 1995; January 30, 1996; February 18, 1997, and January 19, 1998. In April of 1998, the government also announced that the lower end of the miniband would depreciate at a rate of 0.65% a month, while the upper band would depreciate at a rate of 0.75%, de facto widening the minibands over time. The Real had been under much pressure to depreciate due to the overall turmoil in international financial markets since the beginning of the Asian crisis in July 1997. This increased volatility, coupled with the inability of the Brazilian government to commit to some of the structural reforms in their fiscal accounts and social security system, led to wide speculation on the viability of the exchange rate system in the fall of 1998. This speculation subsided after the Brazilian government agreed to an IMF-led financial package in November 1998. The government announced another realignment of the maxibands on January 12, 1999 amid intense turmoil in the financial markets. The day after the Real had depreciated to the upper end of the new band, the government abandoned the system and let the Real float

Argentina, 1989*Political situation*

In 1985 and 1987, large turnouts for elections demonstrated continued public support for a strong and vigorous democratic system. The UCR-led government took steps to resolve some of the nation's most pressing problems, including accounting for those who had disappeared during military rule, establishing civilian control of the armed forces, and consolidating democratic institutions. However, constant friction with the military, failure to resolve endemic economic problems, and an inability to maintain public confidence undermined the effectiveness of the Alfonsín government, which left office 6 months early after Peronist candidate Carlos Raul Menem won the 1989 presidential elections.

Menem introduced structural reforms which reversed the role of the state in Argentine economic life. Menem was not reluctant to use the presidency's extensive powers to issue decrees when Congress was unable to reach consensus on his proposed reforms. Those powers were abolished when the constitution was reformed in 1994 as a result of the Olivos Pact with the opposition Radical Party.

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Economic situation

The 1991 convertibility law established a currency board, which has been a pillar of price stability. During the 1990s, Argentina implemented a successful economic restructuring based on macroeconomic stabilization, trade liberalization, privatization, and public administrative reform, which placed the country on a relatively sound economic footing after decades of decline and high inflation. However, Argentina still needs to complete some difficult structural reforms to ensure a steady growth path.

The government privatized most state-controlled companies, opened the economy to foreign trade and investment, improved tax collection, and created private pension and worker compensation systems. As a result of these policies, Argentina experienced a boom in economic growth in the early 1990s, followed by a period of more erratic growth in the second half of the decade when the country was hit by a series of external economic shocks. While the economy recovered fairly quickly from the effects of the “Tequila” crisis of 1995, Argentina is finding it harder to return to strong growth after the recession that followed successive shocks from East Asia, Russia, and Brazil.

Exchange rate policy

During most of the 1980s Argentina followed a flexible exchange rate system as a direct result of its high inflation policies. It underwent several hyperinflations and changes in its national currency. In 1991 president Menem established the Convertibility law, which created a new currency, fixed the nominal exchange rate to the U.S. dollar at a value of one, and established a currency board by which all national currency was fully backed by U.S. dollars. At the same time, the U.S. dollar became an accepted medium of exchange within the economy, and there was a liberalization of international capital flows. This currency board was successful in stabilizing inflation during the 1990s and brought macroeconomic stability to the country during this period. Inflation rates in the early 1990s, which, although low, were higher than U.S. inflation rates, resulted in a real appreciation of the currency, which hurt the ability of the export sector to benefit from this period of exchange rate stability.

Table 1. Rates of annual nominal exchange rate depreciation

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<i>ARGENTINA</i>	139.65%	488.79%	306.21%	542.44%	789.60%	56.70%	127.38%	308.18%	4736.73%	1051.77%
<i>BOLIVIA</i>	0.00%	161.30%	261.52%	1253.84%	13931.94%	336.78%	6.91%	14.38%	14.53%	17.87%
<i>BRAZIL</i>	76.66%	92.77%	221.45%	220.26%	235.51%	120.24%	187.26%	568.21%	981.65%	2310.11%
<i>CHILE</i>	0.00%	30.53%	54.77%	24.99%	63.35%	19.94%	13.72%	1.67%	8.96%	14.22%
<i>COLOMBIA</i>	15.25%	17.61%	23.05%	27.85%	41.16%	36.50%	24.89%	23.32%	27.87%	31.29%
<i>COSTA RICA</i>	153.95%	71.88%	9.86%	8.37%	13.29%	10.97%	12.13%	20.75%	7.52%	12.36%
<i>DOMINICAN REPUBLIC</i>	0.00%	0.00%	0.00%	0.00%	211.26%	-6.69%	32.38%	58.98%	3.72%	34.47%
<i>EL SALVADOR</i>	0.00%	0.00%	0.00%	0.00%	0.00%	94.09%	3.05%	0.00%	0.00%	36.97%
<i>GUATEMALA</i>	0.00%	0.00%	0.00%	0.00%	0.00%	87.50%	33.33%	4.78%	7.50%	59.29%
<i>HONDURAS</i>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	105.60%
<i>MEXICO</i>	6.81%	130.07%	112.93%	39.75%	53.06%	138.16%	125.28%	64.93%	29%	14.27%
<i>NICARAGUA</i>	0.00%	0.00%	0.01%	0.00%	163.70%	150.90%	5.26%	262676.62%	5703.75%	4401.01%
<i>PERU</i>	46.20%	65.18%	133.47%	112.87%	216.57%	27.09%	20.71%	665.23%	1969.51%	6946.98%
<i>VENEZUELA</i>	0.00%	0.00%	0.17%	74.42%	0.00%	93.33%	0.00%	0.00%	197.09%	16.28%
<i>URUGUAY</i>	18.97%	28.35%	148.14%	62.59%	80.98%	49.70%	48.92%	58.97%	73.27%	88.27%

	1991	1992	1993	1994	1995	1996	1997	1998	1999
<i>ARGENTINA</i>	95.57%	3.89%	0.84%	0.01%	0.07%	-0.01%	-0.02%	0.00%	0.00%
<i>BOLIVIA</i>	12.86%	8.93%	9.35%	8.33%	3.89%	5.71%	3.54%	4.87%	5.49%
<i>BRAZIL</i>	495.32%	1009.92%	1859.86%	1887.68%	43.54%	9.53%	7.25%	7.66%	56.37%
<i>CHILE</i>	14.53%	3.83%	11.47%	3.96%	-5.57%	3.91%	1.70%	9.78%	10.53%
<i>COLOMBIA</i>	26.04%	19.94%	13.67%	-2.11%	8.05%	13.57%	10.06%	24.99%	23.15%
<i>COSTA RICA</i>	33.69%	9.86%	5.70%	10.48%	14.43%	15.56%	11.99%	10.59%	11.06%
<i>DOMINICAN REPUBLIC</i>	48.88%	0.64%	-0.77%	3.82%	3.32%	1.30%	3.56%	7.02%	5.02%
<i>EL SALVADOR</i>	17.06%	4.29%	4.09%	0.30%	0.30%	0.00%	0.01%	-0.01%	0.00%
<i>GUATEMALA</i>	12.11%	2.82%	8.99%	2.06%	1.03%	4.12%	2.6%	5.43%	15.50%
<i>HONDURAS</i>	29.30%	3.41%	17.71%	29.93%	12.63%	23.59%	11.09%	2.93%	6.19%
<i>MEXICO</i>	7.32%	2.53%	0.67%	8.33%	90.20%	18.38%	4.20%	15.38%	4.64%
<i>NICARAGUA</i>	2930.63%	17.07%	12.41%	19.62%	12.24%	11.79%	12.00%	12.00%	11.60%
<i>PERU</i>	311.15%	61.27%	59.60%	10.39%	2.66%	8.88%	8.59%	9.98%	15.47%
<i>VENEZUELA</i>	15.93%	28.13%	30.18%	58.57%	48.22%	63.99%	5.58%	0.00%	0.00%
<i>URUGUAY</i>	72.53%	49.92%	30.29%	27.98%	25.87%	25.56%	18.44%	10.91%	8.28%

NOTE: What we are measuring is the annual change in the average exchange rate and the source is IFS. In the case of Venezuela we are measuring the annual change in the exchange rate (Jan-Dec) and the source is Kaminsky and Reinhart (1996).

Table 2. Events of Nominal Exchange Rate Depreciation

	Year of crisis	2-year nominal depreciation rate	2-year real depreciation rate	5-year real depreciation rate
Brazil	1993/94	8900	-26.10	48.50
Mexico	1995	146	63.00	6.62
Argentina	1989	46800	-32.00	-44.61
El Salvador	1990	113.2	40.20	6.02
Guatemala	1990	85.4	15.30	-2.70
Honduras	1990	170	78.00	2.57
Peru	1990	18146	-12.80	-17.13
Venezuela	1989	247.5	52.50	16.53

Table 3. Behavior of Trade Flows by Industry

Countries	1-digit Industries				2-digit Industries				Sparkman's Rank Correlation of Industry Trade	
	No. of top 5 industries that remain top 5		Std. Dev. of changes in the share of industry trade in total trade		No. of top 5 industries before that remain top 5		No. of top 20 industries before that remain top 20			
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Brazil	5	5	0.017	0.056	3	4	19	18	0.93	0.92
Mexico	4	3	0.046	0.038	3	5	17	17	0.96	0.95
Argentina	4	4	0.021	0.054	4	4	18	18	0.80	0.70
El Salvador	3	5	0.108	0.018	5	4	7	8	0.83	0.87
Guatemala	4	4	0.059	0.029	4	3	20	9	0.88	0.88
Honduras	5	4	0.017	0.013	4	4	14	20	.79	0.79
Peru	2	5	0.064	0.049	3	3	14	17	0.73	0.72
Venezuela	4	4	0.005	0.014	2	4	18	18	0.81	0.78

Table 4. Behavior of Trade Flows with top 20 trading partners

Countries	Std. Dev. of changes in the share of top 20 trading partners' trade in total trade		No. of top 5 country partners that remain top 5		No. of top 20 country partners that remain top 20		Sparkman's Rank Correlation of Trading Partners	
	Export	Import	Export	Import	Export	Import	Export	Import
Brazil	0.0167	0.0139	5	3	18	17	0.74	0.63
Mexico	0.0106	0.0051	4	2	17	17	0.76	0.62
Argentina	0.0780	0.0262	2	4	17	16	0.62	0.81
El Salvador	0.0245	0.0184	3	5	16	18	0.61	0.72
Guatemala	0.0111	0.0222	2	5	16	16	0.59	0.70
Honduras	0.0102	0.0344	4	3	14	19	0.54	0.69
Peru	0.0184	0.0123	4	4	17	8	0.62	0.76
Venezuela	0.0504	0.0093	3	4	15	18	0.61	0.77

Table 5. Annual Rates of Growth of Aggregate Trade Flows

Year	Argentina Value of Exports:	Brazil	El Salvador	Guatemala	Honduras	Mexico	Peru	Venezuela
1987	-7.25	17.65	-13.33	-16.18	-1.25	.	4.99	67.86
1988	43.64	28.81	-7.91	7.59	-18.51	.	.	-12.03
1989	4.73	1.76	-12.06	-20.15	1.32	10.34	.	25.40
1990	29.11	-8.64	10.59	50.92	-11.98	13.47	-3.63	39.10
1991	-3.03	0.68	5.03	3.27	8.55	9.97	-24.57	-14.12
1992	0.44	14.48	2.58	7.73	22.92	70.39	34.54	-6.54
1993	8.84	6.91	23.48	3.16	-9.31	12.32	-0.51	9.95
1994	20.98	12.57	12.01	12.29	-8.04	19.45	30.39	12.80
1995	32.34	6.76	22.82	28.00	6.14	28.73	24.77	-0.10
1996	13.63	2.66	11.85	5.61	27.95	19.66	7.22	31.50
1997	7.13	11.05	21.01	15.44	23.21	15.49	15.57	-1.02
1998	3.67	-3.53	-7.53	10.13	-5.72	6.54	-16.37	-25.69
1999	-11.73	-6.14	-7.39	-4.78	-21.88	16.38	5.91	18.07
Value of Imports:								
1987	23.16	5.55	7.77	39.92	14.44	.	34.04	19.80
1988	-8.59	-3.16	-0.11	0.62	7.64	.	-14.82	25.19
1989	-21.12	13.62	10.13	2.49	5.59	22.36	-23.16	-41.13
1990	-2.78	13.14	-7.05	10.02	-4.14	22.09	22.83	-7.37
1991	102.84	1.94	34.49	12.30	9.99	71.24	19.47	57.34
1992	79.69	-2.51	19.41	33.44	2.00	62.44	26.48	21.69
1993	12.41	33.08	15.68	5.53	23.56	5.00	17.84	-13.46
1994	29.20	30.20	17.19	1.87	11.36	23.12	34.36	-27.84
1995	-7.06	39.63	27.00	24.36	18.61	-9.65	35.31	33.92
1996	18.46	7.43	-6.12	-4.44	11.26	21.71	2.57	-17.33
1997	27.16	15.23	12.17	2.43	27.06	24.55	7.61	42.80
1998	3.95	-5.93	3.29	20.74	5.53	14.21	-11.16	8.01
1999	-18.74	-14.71	0.64	-2.07	3.26	13.37	12.01	-7.17

Numbers in bold indicate the year of the exchange rate devaluation.

Table 6. Changes in Trading Volume of Major Trading Partners

ARGENTINA		BRAZIL		Exports		Imports		Exports	
	Change Value		Change Value		Change Value		Change Value		Change value
U.S.	1.91	U.S.	1.36	U.S.	0.56	U.S.	1.36	U.S.	0.29
Brazil	2.21	Germany	1.61	Netherlands	0.85	Japan	1.61	Japan	0.22
Germany	0.49	Argentina	3.17	Brazil	1.51	Argentina	3.17	Netherlands	0.35
Japan	0.29	S. Arabia	-0.14	S. Union	-0.76	S. Arabia	-0.14	Germany	0.09
Bolivia	-0.39	Japan	1.48	Germany	1.04	Japan	1.48	Italy	0.00
Italy	0.86	Italy	3.08	Japan	0.30	Italy	3.08	Argentina	3.70
France	0.38	France	1.07	China	-0.40	France	1.07	Belgium	0.41
Chile	2.39	Uruguay	0.39	Italy	1.31	Uruguay	0.39	U.K.	0.36
Mexico	0.26	Switzerland	0.33	Iran	0.44	Switzerland	0.33	France	-0.04
Switzerland	0.05	Chile	1.01	Belgium	0.04	Chile	1.01	Korea	0.30
Spain	1.40	Venezuela	0.97	Peru	0.07	Venezuela	0.97	Mexico	-0.33
Belgium	1.70	U.K.	1.17	Spain	2.11	U.K.	1.17	Spain	0.29
Netherlands	0.89	Canada	0.99	Uruguay	1.33	Canada	0.99	Chile	1.15
Uruguay	1.99	Paraguay	0.92	Chile	3.09	Paraguay	0.92	Taiwan	-0.29
Austria	0.52	Algeria	0.99	France	1.34	Algeria	0.99	Paraguay	2.53
Peru	0.43	Sweden	1.76	Mexico	1.45	Sweden	1.76	China	3.20
Total Growth	1.19		1.76		0.82		1.76		0.49

Table 6. (continued)

HONDURAS	Imports Change Value	Exports Change Value	MEXICO	Imports Change Value	Exports Change value
U.S.	0.74	0.08	U.S.	0.86	1.46
Japan	-0.28	0.39	Japan	0.52	0.41
Venezuela	-0.80	-0.49	Germany	0.70	-0.30
Mexico	-0.17	-0.42	France	0.07	0.26
Germany	-0.04	0.17	Brazil	-0.33	-0.25
Curaçao	0.36	-0.10	Spain	0.02	1.00
Guatemala	1.28	-0.39	Canada	1.51	0.80
Panama	0.26	0.91	Italy	0.59	0.74
Brazil	0.08	0.25	Switzerland	-0.52	0.15
Netherlands	-0.66	0.21	U.K.	0.72	0.77
Puerto Rico	-0.06	0.07	Netherlands	0.36	1.75
U.K.	-0.54	0.92	Sweden	-0.08	0.03
Costa Rica	1.34	-0.17	Korea	3.13	2.66
Taiwan	-0.16	-0.15	N. Korea	3.73	3.72
El Salvador	2.88		China	5.34	2.33
Spain	0.15		Venezuela	0.85	0.98
Colombia	0.12				3.87
Switzerland	0.08				
Italy	0.40				
Total Trade Growth	0.32	0.02	0.85	1.32	

Table 6 (continued)

EL SALVADOR		VENEZUELA		Exports		Imports		Exports	
	Imports			Change Value	Change Value	Imports		Change value	Change value
	Change Value					Change Value			
U.S.	1.08	U.S.	U.S.	-0.13	0.37	U.S.	U.S.	1.09	
Guatemala	0.60	Germany	Germany	-0.46	0.06	Curaçao	Curaçao	2.02	
Mexico	0.28	Guatemala	Japan	0.81	0.15	Germany	Germany	0.73	
Venezuela	0.52	Costa Rica	Italy	0.89	0.20	Japan	Japan	0.33	
Japan	0.60	Japan	Brazil	-0.71	0.30	Puerto Rico	Puerto Rico	1.65	
Germany	0.55	Canada	France	-0.72	-0.36	Canada	Canada	0.42	
Costa Rica	0.45	Honduras	U.K.	2.69	-0.21	Dom.Rep.	Dom.Rep.	-0.79	
Netherlands	0.27	Panama	Spain	0.68	0.11	Netherlands	Netherlands	3.35	
Taiwan	0.67	Nicaragua	Canada	7.60	0.27	Colombia	Colombia	2.13	
U.K.	0.35	U.K.	Netherlands	-0.53	0.04	Italy	Italy	-0.48	
Canada	0.14	Belgium	Switzerland	0.97	-0.48	Brazil	Brazil	2.44	
Honduras	1.89	Dom.Rep.	Belgium	0.64	0.39	Peru	Peru	0.42	
Brazil	1.87	Puerto Rico	Panama	0.71	1.49	Belgium	Belgium	0.83	
Italy	1.03	Netherlands	Colombia	4.25	3.61	Aruba	Aruba	0.78	
Panama	3.03	Mexico	Mexico	18.03	1.43				
Spain	0.77	Belize	Chile	2.39	-0.08				
Total Trade Growth	0.77		Total Trade Growth	0.12	0.30			0.60	

Table 6 (continued)

PERU	Imports Change Value	Exports Change Value	GUATEMALA	Imports Change Value	Exports Change value
U.S.	0.61	1.19	U.S.	1.12	0.54
Germany	-0.19	1.09	Mexico	0.41	0.77
Argentina	0.26	0.33	Germany	0.10	-0.35
Brazil	1.12	3.27	Japan	0.45	0.88
Japan	0.68	2.58	El Salvador	0.83	-0.48
Italy	-0.34	2.34	Venezuela	1.10	-0.40
Ecuador	0.21	2.21	Costa Rica	0.43	-0.28
Colombia	1.81	1.72	Italy	-0.08	1.89
Canada	-0.20	1.32	Brazil	0.60	0.40
U.K.	-0.32	1.99	U.K.	0.05	0.27
Belgium	-0.29	2.38	Korea	0.29	-0.54
Switzerland	-0.44	5.62	Canada	0.09	3.00
Venezuela	1.10	3.38	Switzerland	0.22	-0.27
France	-0.29	3.10	Netherlands	-0.03	-0.02
New Zealand	-0.09	2.80	Honduras	1.42	5.64
		1.12	Puerto Rico	2.10	
Total Trade Growth	0.43	1.71	Total Trade Growth	0.74	0.41

Table 7. Sensitivity of Bilateral Trade Flows to Exchange Rate Changes

$$\%TF_{ij,t} = a + b_0\Delta e_{ij,t} + b_1 * Latin_j + b_2 * ind_j + b_3 * ngr_{ij} + b_4 * (\Delta e_{ij,t} * Latin_j) + b_5 * (\Delta e_{ij,t} * ind_j) + b_6 * (\Delta e_{ij,t} * ngr_{ij})$$

Exchange Rate	Constant	$\Delta e_{ij,t} ind_j$	$Latin_j$	ngr_{ij}	$\Delta e_{ij,t}$	$*ind_j \Delta e_{ij,t}$	$*Latin_j$	$\Delta e_{ij,t} * ngr_{ij}$	Adj. R ²
Exports (No. Observations = 126)									
Nominal	.55*	.08**							.05
	.09	.03							
Nominal	.89**	.05***	-.51	-.36	.66*				.16
	.41	.03	.42	.45	.23				
Nominal	1.73*	-.19	-1.44**	-1.24**	.86*	.31*	.37	-.21	.21
	.56	.11	.57	.59	.25	.12	.27	.25	
Real	.41*	.09**							
	.08	.04							.17
Real	.83**	.08**	-.46	-.33	.65*				.17
	.41	.04	.42	.44	.22				
Real	1.69*	-.22	-1.41**	-1.18**	.84*	.43*	.32	-.12	
	.53	.13	.54	.56	.24	.14	.26	.23	
Imports (No. Observations = 117)									
Nominal	1.23*	-.06							.00
	.22	.08							
Nominal	.89	-.06	-.11	1.13	-.01				.05
	.93	.08	.95	1.02	.58				
Nominal	.97	-.09	-.22	1.15	-.09	.06	-.14	.17	.03
	1.23	.37	1.26	1.32	.63	.38	.46	.31	
Real	1.25*	-.06							.00
	.21	.10							
Real	.66	-.06	-.09	1.15	.01				.05
	.92	.10	.95	1.02	.58				
Real	.93	-.12	-.11	1.12	-.25	-.00	-.20	.41	.04
	1.09	.43	1.12	1.18	.63	.45	.56	.40	

*, **, ***, Significant at 1%, 5% and 10% level, respectively. Standard errors are reported below coefficient estimates.