POLICY RESEARCH WORKING PAPER 1529

Interest Rates, Credit, and Economic Adjustment in Nicaragua

Ulrich Lächler

Nicaragua's dollar-equivalent and real interest rates are not unusually high by regional standards. A sustained reduction of interest rates below the regional average may be possible, but would require further major structural reform.

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Summary findings

The high commercial lending rates Nicaragua is currently experiencing, together with a perceived scarcity of credit, have often been blamed for the country's slow growth and have been considered a major failing of the adjustment program initiated in 1991.

Lächler suggests that such blame is largely misplaced. Current interest rates are indeed higher than historical levels or international benchmark rates (such as LIBOR or the U.S. treasury bill rate), but those are not the appropriate comparators for Nicaragua today.

On the other hand, Nicaragua's real interest rates have risen significantly in recent years and currently exceed real rates in other Central American countries. These high real rates are attributable entirely to a real currency depreciation that has been taking place since 1992, and are not greatly different from rates observed in other Latin American countries that underwent similar adjustments.

Lächler explains the link between real interest rates and adjustment in Nicaragua and, in that context, explores policy options for reducing interest rates.

His main conclusion: A sustained reduction in real interest rates to below those observed in neighboring countries would require further major structural changes, such as the adoption of a foreign currency standard.

This paper — a product of the Country Operations Division, Country Department II, Latin America and the Caribbean Region — is a self-standing report prepared as a contribution to the Bank's ongoing policy dialogue with Nicaragua on important economic issues facing the country. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Gerry Carter, room I4-308, telephone 202-473-0603, fax 202-676-1464, Internet address gcarter@worldbank.org. November 1995. (30 pages)

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1. The author is grateful to Mario Flores, Armando Navarrete and Pablo Miranda of the Central Bank of Nicaragua for their help in obtaining the data needed for this report. Thanks are also due to Joe Ryan, Julio E. Revilla, Armando Cáceres, Gustavo Arcia and Noel Sacasa for their thoughtful comments on earlier drafts.

INTEREST RATES, CREDIT AND ECONOMIC ADJUSTMENT IN NICARAGUA

1. The high commercial lending rates currently observed in Nicaragua, together with a perceived scarcity of credit, have been frequently blamed for the country's slow growth and pointed out as a major failing of the adjustment program initiated in 1991. This essay suggests that such blame is largely misplaced. While current interest rates are indeed high when compared with historical levels or international benchmark rates such as LIBOR or the US Treasury Bill rate, these rates are not the appropriate comparators for Nicaragua today. A look at rates prevailing elsewhere in Latin America reveals that Nicaragua's dollar-equivalent interest rates are not unusually high. Nicaragua's real interest rates, on the other hand, have risen significantly in recent years and are currently above real rates in other Central American countries. These high real rates are entirely explained by a real currency depreciation that has been taking place since 1992 and are also not unusual compared to the rates observed in other Latin American countries that experienced similar adjustments. This essay seeks to explain the link between real interest rates and the adjustment process in Nicaragua, and in that context discuss alternative policy options for reducing interest rates. The main conclusion of this analysis is that a sustained reduction in real interest rates below the rates observed in neighboring countries would require further major structural changes, such as the adoption of a foreign currency standard.

I. Background

2. Interest rates have risen throughout Latin America since the onset of the debt crisis in the early 1980s and subsequent liberalization of financial markets. Many factors contributed to this phenomenon: adverse terms of trade shocks and rising international interest rates, combined with overambitious public spending programs, led to a rapid expansion of fiscal deficits that initially were financed with foreign borrowings. As foreign borrowing opportunities dried up, rampant inflation and dollarization ensued. Attempts to stem this tide through interest rate and capital controls discouraged domestic financial savings and encouraged capital flight. Repressive financial policies, sometimes accompanied by the nationalization of banks, left financial institutions severely weakened. At the same time, financial innovations greatly increased the mobility of capital across national frontiers, so that the controls previously applied to maintain interest rates artificially low became largely ineffective. As these events unfolded, interest rates increased because **(i)** savers, once hurt by inflation, subsequently demanded higher returns to compensate for the risk of renewed instability, **(ii)** interest controls could not be maintained lest they encourage further capital flight, and **(iii)** the cost of intermediating credit increased as financial institutions became weaker. Nicaragua's financial system also evolved according to this stylized pattern, with additional distortions induced by civil war and centralized planning. By the end of the 1980s, it had experienced one of the worst hyperinflations observed in Latin America and its nationalized financial system was bankrupted.

3. In March 1991, the Government of Nicaragua initiated a stabilization and market-liberalizing adjustment program designed to promote faster output and export growth. This program has been very successful in bringing down inflation and arresting the continuing decline of GDP that took place after 1983. A key element of this program is the liberalization of the financial sector, which included **(i)** the unification of the exchange rate system into an official market for current account transactions and a parallel market for financial and non-government service account transactions, **(ii)** progressive removal of interest rate controls, which were

completely eliminated by 1993, and (iii) eliminating the practice of directing credit to specific subsectors. The monopoly on banking services held by the state-owned banks was abolished in 1991 and, by the end of 1994, nine private commercial banks had begun to operate.

4. With the liberalization of the financial sector, active markets developed for loans and deposits in both US Dollars and Cordobas. All Cordoba transactions except sight deposits, however, continue to include a "maintenance of value" provision, whereby the rate of return in local currency is indexed to the official exchange rate. Even though the stabilization program succeeded in bringing down inflation rates near single digit figures and in maintaining the spread between the parallel and official exchange rates below 5 percent, the market has continued to express a general preference for indexed transactions.

II. The Evolution of Interest Rates since 1991

5. A discussion of interest rates, especially in a comparative context, only makes sense when their nominal levels are adjusted for differences in inflation or in the rate of currency depreciation. Accordingly, this analysis focuses on dollar-equivalent and real interest rates, using a decomposition method applied by Rodriguez (1994): for any nominal lending rate, **IA**, the corresponding ex post dollar-equivalent rate is given by **IADOL ≈ IA - DEV**, where **DEV** stands for the rate of devaluation of the domestic currency.[1] The real interest rate, in turn, is derived as **IAREAL ≈ IA - INF**, where **INF** represents the rate of domestic inflation. In the case of Nicaragua, since virtually all loans and deposits are indexed to the US Dollar, interest rates are automatically quoted as ex post dollar-equivalent rates based on the official exchange rate. To calculate real interest rates in that case first requires that the dollar-equivalent rate be transformed into nominal Cordoba rates (using the official devaluation rate) and then deflated by the domestic inflation rate.

Dollar-Equivalent Interest Rates

6. The top half of **Table 1** compares the average dollar-equivalent lending rates in Nicaragua with those prevailing in the other Central American countries during 1991-94. These lending rates refer to short term loans with maturities of up to one-year. As described in Annex B, these lending rates do not always refer to the same loan modality or aggregation procedure. For some countries they refer to weighted-average rates and for others to arithmetic averages. In spite of these differences, however, meaningful comparisons across countries can still be made. Based on Table 1, Nicaragua's dollar-equivalent lending rates do not appear to be systematically higher than those observed in the other countries in the region. Although somewhat higher than the Central American average in 1991-93, Nicaragua's rates are clearly below the average in the first half of 1994. In this sample, only Honduras stands out with very negative interest rates in 1993-94, suggesting the onset of disorderly macroeconomic

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1. This derivation is an approximation of the correct conversion formula, **1+IADOL = (1+IA)/(1+DEV)**. Applying the natural log operator to both sides of the equation, this expression converges to **IADOL = IA-DEV**, as IA and DEV approach zero; since lim Ln(1+x) = x as x->0. The same approximation method also applies to the calculation of real interest rates, **1+IAREAL = (1+IA)/(1+INF)**. The dollar-equivalent and real interest rates presented here are all based on these approximations in order to permit comparisons with the results obtained for other countries by Rodriguez (1994), who used this approximation method to decompose interest rates into naturally additive spreads. To maintain approximation errors within acceptable bounds, all interest rates are first transformed into monthly rates before applying the approximation procedure and then reconverted into annual rates.

adjustments. Excluding Honduras from the sample, the average lending rate over the three year period covered in Table 1 is 19.8 percent for the region and 20.5 percent for Nicaragua.

TABLE 1
Average Lending Rates in Central America
(on Local Currency Loans)

	1991[1]	1992	1993	1994[2]
Dollar Equivalent Lending Rates (in percent per annum)				
Costa Rica	25.3	30.2	19.9	26.1
El Salvador	15.1	8.7	19.8	18.6
Guatemala	18.5	15.2	14.7	30.9
Honduras	19.4	12.3	-1.0	-14.5
NICARAGUA	22.3	22.7	20.5	14.1
Real Lending Rates (in percent per annum)				
Costa Rica	14.2	17.3	19.3	15.1
El Salvador	16.8	-3.8	6.4	9.8
Guatemala	15.1	5.7	9.7	14.3
Honduras	14.0	13.9	4.4	-7.7
NICARAGUA	3.6	20.5	23.2	21.4

[1] Rates for 1991 refer to July through December.
[2] Rates for 1994 refer to January through June.

Source: See Annex B.

7. Using a sample of six South American countries and Mexico,[2] Rodriguez (1994) calculated the average dollar-equivalent lending rate for local-currency operations to be 35 percent in 1992 (or 32 percent when Peru is excluded from the sample). These rates appear significantly higher than those reported on average for Central America. The author also notes, however, that a dollarization process has been taking place in these countries (similar to that observed in Nicaragua), which has reduced significantly the relevance of unindexed local-currency transactions. In the case of Argentina, for example, he calculated that only 43 percent of credit transactions in 1992 were made in unindexed local currency (at an average lending rate

2. The countries included in Rodriguez' (1994) sample are: Argentina, Bolivia, Chile, Colombia, Mexico, Peru and Uruguay. In 1992, Peru experienced sharp exchange rate fluctuations that temporarily resulted in highly negative interest rates that distort the sample average interest rates for that year. To account for this distortion, the average interest rates are presented both with and without Peru.

of 36 percent), while 57 percent of credits were indexed or dollar-denominated (at an average rate of 13 percent), yielding a weighted-average, dollar-equivalent lending rate of 23 percent. When all sources of credit are included in this manner, Rodriguez (1994, pg. 22) estimates that the average dollar-equivalent lending rates in his country sample was close to 21 percent in 1992. This last figure approximates the average rates calculated for Central America.[3]

TABLE 2
Average Dollar-Equivalent Borrowing Rates in Central America
(on Local Currency Deposits)

		1991[1]	1992	1993	1994[2]
		(in percent per annum)			
Costa Rica:	1 month dep.	9.4	17.1	7.2	12.8
	3 month cert.	14.5	18.8	10.0	14.6
El Salvador:	2 month dep.	9.6	4.0	15.0	12.9
Guatemala:	1 month dep.	10.5	6.4	3.4	17.2
Honduras:	1 month dep.	6.8	1.0	-11.6	-24.6
	3 month cert.	8.9	6.8	-8.0	-20.5
Nicaragua:	1 month dep.	16.1	14.9	12.2	5.9

[1] Rates for 1991 refer to July through December.
[2] Rates for 1994 refer to January through June.

Source: See Annex B.

8. A similar observation also applies to dollar-equivalent borrowing rates, which are shown in **Table 2**. The average dollar-equivalent interest rate on 1-month savings deposits in Nicaragua is 12.7 percent, which is within the range of rates observed in other Central American countries; again excepting Honduras. Nicaragua's borrowing rates are highest in 1991 and then decline over time. As described in the next section, this interest rate behavior can be attributed to declining risk premia. The average rate calculated by Rodriguez for South America and Mexico in 1992 is 11.3 percent (excluding Peru). These rates are close enough to reaffirm the earlier finding that interest rates in Nicaragua are not unusually high by regional standards.

9. The preceding finding -- that dollar-equivalent interest rates appear to be roughly similar across the region -- should not come as a surprise in view of the liberalized conditions that currently characterize most financial markets in Latin America. As predicted by the interest parity hypothesis, under conditions of sufficient capital mobility, interest rate arbitrage equates

3. Data on the extent of dollarization in the Central American countries is very limited. In Nicaragua, about 50 percent of all commercial bank deposits are denominated in US Dollars, but only 19 percent of loans are dollar-denominated. Lending rates in late 1994 on these dollar-loans are quoted at 14-16 percent. Based on this information, the weighted average dollar-equivalent lending rate in Nicaragua for 1994 (Jan-Sep) is about 18.9 percent.

domestic interest rates to the corresponding "world" interest rates plus the expected rate of devaluation and a premium to compensate for differences in country and currency risk. Therefore, since capital controls have been largely eliminated and assuming that exchange rate expectations are not systematically biased, Nicaragua's dollar-equivalent interest rates should on average turn out similar to the rates prevailing in neighboring countries, except for differences in risk. In view of Nicaragua's reputation as an extremely high-risk country (Euromoney, September 1994), perhaps the most surprising finding so far is that Nicaragua's dollar-equivalent rates do not appear to be significantly higher than those observed elsewhere in the region.

Basic Decomposition of Risk

10. This subsection identifies two elements of risk embodied in the interest rate. As described by Rodriguez (1994) and shown in **Table 3**, lending rates can be additively decomposed into the following components:

$$\text{Dollar-Equiv. Lending Rate} = \text{Lending Spread} + \text{Borrowing Rate}$$

$$= \text{Lending Spread} + \text{Borrowing Spread} + \text{TBILL},$$

where **TBILL** denotes the interest rate on (3-month) US Treasury Bills, which serves as a benchmark to calculate risk premia. The coexistence in Nicaragua of dollar-denominated and Cordoba-denominated deposits permits a further decomposition of the Borrowing Spread into two sources of risk as:

$$\text{Dollar-Equiv. Lending Rate} = \text{Lending Spread} + \text{CRED} + \text{RISK} + \text{TBILL},$$

where **RISK** represents a measure of country risk and **CRED** represents a measure of credibility in the economic program, sometimes referred to as currency risk. (Increases in CRED indicate declining credibility.)

11. The variable denoted **RISK** is defined as the difference between the average interest rate on Dollar-denominated deposits in Nicaragua and the US Treasury Bill rate. Since Dollar deposits in Nicaragua and US Treasury Bills are both denominated in the same currency, they should command the same rate of return except for differences in risk associated with the country/institution that emits each financial instrument. Based on similar reasoning, **CRED** is defined as the difference between the dollar-equivalent interest rate on Cordoba-denominated deposits and the interest rate on Dollar-denominated deposits in Nicaragua. Since Cordoba-denominated term deposits in Nicaragua are indexed to the US Dollar, their interest rate should be the same as the rate on a Dollar-denominated deposit if it were certain that the Cordoba would be maintained fully convertible vis-a-vis the US Dollar. Full convertibility in this context would mean the maintenance of a unified exchange rate (or constant exchange rate spread) and the absence of exchange controls. The difference between both interest rates, therefore, measures the market's lack of confidence in policymakers' ability to maintain unified exchange rates, which ultimately depends on the ability to maintain adequate fiscal and monetary discipline. Both sources of risk have been calculated for Nicaragua with the results shown in **Table 3**.

TABLE 3
Main Determinants of the Interest Rate in Nicaragua

	Dollar-Equiv. Lending Rate	Lending Spread	Borrowing Spread		TBILL
			CRED	RISK	
NICARAGUA	annual average rates (in %)				
1991 (Jul-Dec)	22.3	6.2	10.7	0.4	5.0
1992	22.7	7.8	10.0	1.5	3.4
1993	20.5	8.3	7.0	2.2	3.0
1994 (Jan-Sep)	19.8	8.7	5.5	1.9	3.7
Source: Central Bank of Nicaragua					

12. According to the preceding decomposition method, the lending rate is determined by **(i)** the rate on US Treasury Bills (as a proxy for international credit conditions), **(ii)** the market's perception of country risk, **(iii)** the market's confidence in the macroeconomic program, and **(iv)** the average lending spread of commercial banks. **Table 3** shows that among these four factors, country risk (**RISK**) appears to be the least significant in determining borrowing spreads in Nicaragua. Much more important is the perceived risk of destabilization, (**CRED**). In any case, both **CRED** and **RISK** appear to be declining in 1994, suggesting a gradual return of confidence in the Nicaraguan economy. The other important component in determining the lending rate is the lending spread. Although the spreads shown in Table 3 are not unusually high by Central and South American standards, they are high compared to those observed in other regions with competitive banking systems.

Real Interest Rates

13. The lower half of **Table 1** describes the real lending rates observed in Central America during 1991-94. The average real rate for the Central American region over the three-year period turns out to be 11.7 percent (or 12.8 percent when Honduras is excluded). In contrast to the earlier finding on dollar-equivalent rates, Nicaragua stands out this time by exhibiting the highest real lending rates in Central America during 1992-94; with average rates exceeding 20 percent. By way of comparison, Rodriguez (1994) calculated the average real lending rate to be 30 percent for credit transations in local currency during 1992 for his sample of Latin American countries (or 22 percent if Peru is excluded from the sample). When indexed and dollar-denominated credit sources are also included, however, he estimates the weighted-average real lending rate to be around 20 percent (or 12 percent when Peru is excluded).

III. Real Interest and Exchange Rates

14. The contrasting behavior of real and dollar-equivalent interest rates is entirely due to changes in the real exchange rate. Recall that the dollar-equivalent lending rate, **IADOL**, and the real lending rate, **IAREAL**, are defined as:

$$IADOL = IA - DEV, \quad \text{and} \quad IAREAL = IA - INF.$$

The difference between both rates can then be seen to represent an index of real exchange rate changes, denoted **DRER**:

$$DRER = IAREAL - IADOL = DEV - INF,$$

such that DRER > 0 indicates a real devaluation of the local currency and DRER < 0 indicates a real appreciation.[4] Observe from **Table 4** that real lending rates in Nicaragua quickly increase after 1991 and then exceed dollar-equivalent rates after 1992, indicating that a real devaluation has been taking place. This real devaluation coincides with the stabilization and adjustment program initiated in 1991 with the objective of promoting efficient export-led growth and reducing the country's external imbalances. Among the other Central American countries, only Honduras experienced a similar real exchange rate depreciation in 1993-94.

15. The need for structural adjustment arises when balance of payments deficits have become unsustainable and a country's growth is constrained by a lack of foreign reserves. This has been the case with Nicaragua, whose resource balance deficit in 1991-92 averaged 30 percent of GDP, while its exports had declined to less than half the value exported a decade earlier. While foreign donors have been willing to finance such high external deficits on a temporary basis, they have also indicated that Nicaragua cannot count on such aid inflows indefinitely. Due to budget constraints within the donor countries and the emergence of new claimants on donor funds (especially in the former Soviet Union and Middle East), aid flows to Nicaragua are expected to decline gradually toward the per-capita aid levels received by other low-income countries in the region.[5] Under these circumstances, a real devaluation would be desirable in

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4. The most common definition of the real exchange rate for analytical purposes is the price of tradables divided by the price of non-tradables. Since such price series are difficult to obtain, a common procedure is to construct a proxy for the real exchange rate as, RER = EP^*/P, where E is the nominal exchange rate (Cordobas per US$), P^* is the US Wholesale Price Index, and P is the domestic Consumer Price Index. Since consumer price indexes include the prices of non-tradables, while wholesale price indexes only contain the prices of traded goods, this proxy variable tracks changes in the relative price of tradeables to non-tradeables. Taking a proportional derivative of RER, denoted DRER, yields: DRER = DEV - INF + INF^*, where DEV = DE/E, INF = DP/P and $INF^* = DP^*/P^*$. This formulation is the same as that in the text under the assumption that changes in the US Wholesale Price Index can be ignored, since they are negligible compared to changes in the nominal exchange rates and the domestic CPI. An important byproduct of ignoring INF^*, however, is that this formula yields a downwardly biased measure of real devaluation rates. The estimates of real devaluation rates in Table 4, therefore, are useful for comparing real devaluation rates across countries in the region, but are less accurate for measuring the absolute amount of real devaluation taking place in any one country.

5. While total aid inflows to Nicaragua (including donations and loans) have been declining gradually, the composition of that aid has changed substantially in favor of project (tied) aid. In particular, the liquid (untied) portion of aid declined by more than half, from US$ 477 million in 1992 to US$ 217 million in 1994. This aid component is the most relevant for the issues of economic adjustment addressed here, given that reductions in project aid are automatically associated with an equivalent reduction of imports (and, thus, do not immediately create an unfinanced external deficit), whereas reductions in liquid aid require deliberate policy responses to discourage imports and promote exports, or adjustments through reduced domestic absorption.

order to encourage the compensatory adjustments needed to close the balance of payments gap created by the aid decline.

TABLE 4
Real Devaluation Rates in Central America (DRER = IAREAL - IADOL)
(in percent per annum)

	1991[1]	1992	1993	1994[2]
Costa Rica	-11.1	-12.9	-0.6	-11.0
El Salvador	1.7	-12.5	-13.4	-8.8
Guatemala	-3.4	-9.5	-5.0	-16.6
Honduras	-5.4	1.6	5.4	6.8
NICARAGUA	-18.7	-2.2	2.7	7.3

[1] Rates for 1991 refer to July through December
[2] Rates for 1994 refer to January through June

Source: Own calculations based on data in Table 1.
Note that negative figures indicate a real appreciation of the local currency.

16. It is also important, however, to recognize that Nicaragua does not have much choice about reducing its external deficit in the face of declining foreign aid because it does not have unlimited reserves to draw down and lacks the necessary financial creditworthiness to borrow abroad from non-concessional sources. That is, Nicaragua cannot borrow at will from international financial markets to close a balance of payments gap. Rather, this gap is mainly determined by the amount of net aid supplied by foreign donors, be it in the form of fresh disbursements or debt service relief. As the supply of aid is reduced, therefore, Nicaragua has to decrease its trade deficit, either in an orderly manner through a deliberate reduction of domestic absorption, coupled with supply-side incentives, or in a disorderly manner through an inflation tax and protectionist trade policies. Either way, the trade deficit has to come down and this invariably implies a real exchange rate devaluation; i.e., an increase in the relative price of tradeable goods versus the price of non-tradeables.[6]

17. Real devaluations play an important role in reestablishing external balance by encouraging the production of exportable goods and import substitutes, while discouraging the domestic consumption of both products. This shift in economic incentives is reinforced by the rise in real interest rates above dollar-equivalent rates: for producers of tradeable goods, the dollar-equivalent lending rate is of greater relevance when making investment decisions than real rates because their receivables are calculated in dollar-denominated terms with prices determined in

6. Since the prices of tradeable goods in a small open economy are determined in the world market, domestic supply and demand conditions only serve to determine the prices of non-tradeables. To reduce the trade deficit by a target amount in this context, aggregate domestic absorption has to decline, which exerts downward pressure on the prices of non-tradeables and, thereby, raises the relative price of tradeables. This argument is spelled out with greater analytical rigor in Annex A.

world markets. Conversely, the real interest rate is more relevant for producers of non-tradeable goods, the prices of which figure more prominently in the calculation of domestic inflation. Therefore, an increase in real lending rates above dollar-equivalent rates -- reflecting the onset of a real devaluation -- renders investments in the tradeables sector relatively more attractive than investments in the non-tradeables sector. This is precisely the desired incentive pattern when seeking to promote an outward-oriented economic adjustment.

18. Any systematic divergence between real and dollar-equivalent interest rates can only be temporary, however, since that divergence is due to the rate of change, rather than level, of the real exchange rate. Once the real exchange rate reaches its equilibrium level, the pressure to depreciate or appreciate further is removed and, hence, both interest rates would again be identical.

19. One final observation is that Nicaragua's experience with high real interest rates is not unique and not nearly as disruptive as in some other countries facing adjustment needs. In fact, the rates observed in Nicaragua appear modest compared to the truly exorbitant real rates (in excess of 70 percent) reached in Argentina or Peru at the onset of their adjustment programs in the early 1990s; see Annex D.

IV. Why Do High Real Interest Rates Constitute a Problem?

20. The surge in real interest rates observed worldwide in the early 1980s has raised widespread concern about their possibly detrimental economic effects. In response to these concerns, numerous studies were carried out to measure the impact of high interest rates on key economic variables such as output growth, investment, factor productivity and relative factor returns. An empirical regularity observed in several cross-country studies (e.g., World Bank (1989) and Galbis (1993)) is that countries with higher real interest rates generally tended to exhibit faster output growth, but not higher investment rates. This finding suggests that higher interest rates discourage investment, but encourage a more efficient allocation of resources which raises overall productivity, such that the net impact on growth is positive. While other studies (e.g., Khatkhate, 1988) have questioned the empirical robustness of these findings, a basic lesson from this literature still holds, namely that higher interest rates do not automatically constitute an obstacle to growth. Rather, the impact of higher interest rates on investment and growth mainly depends on what has caused interest rates to rise in the first place.[7]

21. Earlier sections indicated that the increase of real interest rates observed in Nicaragua is primarily caused by two factors: one is the elimination of domestic interest rate and capital controls, which permitted Nicaragua's financial market to become reconnected to the international financial system. This, in turn, enabled Nicaragua's dollar-equivalent interest rates to reach international levels, plus a risk margin. The second important factor is the onset of a real devaluation, which coincided with the adoption of stabilization and adjustment measures needed to reduce Nicaragua's unsustainable external deficit. Since the presence of interest

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7. On theoretical grounds one would not expect a simple, invariant relationship between real interest rates, investment, savings and growth, since all these variables are simultaneously determined by other more fundamental factors. For example, an increase in real interest rates due to a decline in financial savings on account of an expected devaluation is likely to be negatively related to investment and growth. In contrast, an increase in real rates occasioned by an investment surge triggered by the discovery of precious natural resources would be associated with higher investment and growth.

controls generally tends to contract the size of credit markets, their elimination should lead to an overall expansion of credit.[8] On the other hand, the introduction of stabilization and adjustment measures designed to reduce the external deficit would be expected to restrain the expansion of credit triggered by the elimination of controls. Judging by the extremely rapid growth of private sector credit during 1991-94, this restraining force appears to have been minimal; see **Figure 1**. While real GDP has only grown by about 3 percent during 1991 through 1994, the volume of outstanding credit has grown in real terms by 93 percent between September 1991 and September 1994. This rapid expansion in credit took place, moreover, in spite of a major portfolio clean-up in the public commercial banks that reduced the volume of outstanding credit by 32 percent between March 1992 and June 1992. Clearly, the total availability of credit does not appear to have been a major constraint on growth.

22. The notion that higher real interest rates lead to higher productivity is only expected to apply for economies where the system of credit allocation functions efficiently in channeling savings to those activities with the highest expected rates of return. The combination of rapid credit growth, rising real interest rates and slow output growth observed in Nicaragua during 1992-94, however, casts doubt on the efficiency of its credit allocation mechanisms. It suggests, instead, that much of the expansion in credit has been the result of "distress borrowing". That is, as real interest rates increase, poorly performing indebted enterprises experience increasing financial difficulties and, thus, are tempted to borrow more on the speculative assumption that an economic recovery or improved sectoral conditions will soon take place to render the enterprise profitable again. In the absence of adequate prudential supervision, this leads to roll-over bank lending to troubled enterprises that exacerbates their financial difficulties, but contributes little to output growth.

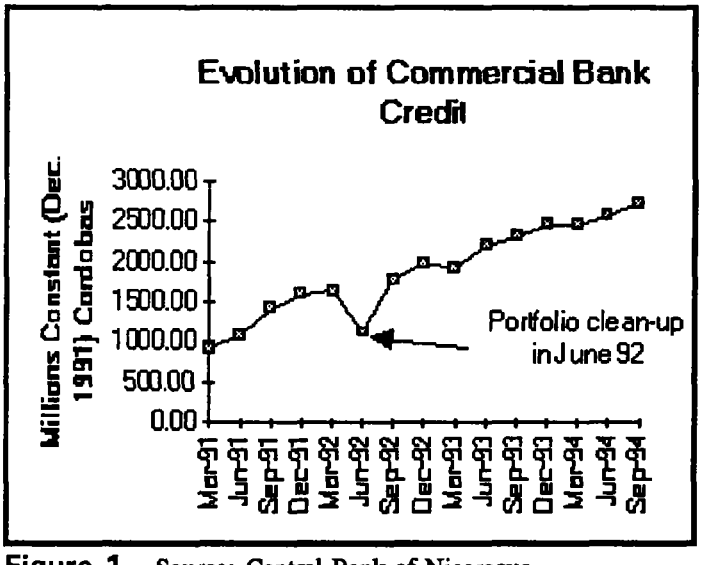

Figure 1 - Source: Central Bank of Nicaragua

23. Nicaragua's public banks are especially vulnerable in this regard. The two largest public banks, BANADES and BANIC, account for about two-thirds of total commercial loans and, over the last decade, have developed unsound lending practices, while becoming accustomed to lax banking supervision. Given that the past debts owed to the public banks were routinely forgiven, either through government decree or through rapid inflation, a culture of mistaking

8. Interest rate controls introduce a wedge between the demand and supply for credit. The rise in interest rates triggered by the elimination of controls reduces the overall excess demand for credit, but raises the supply of credit, which is the binding side of the market under the imposition of interest rate ceilings. The expansion of credit supply, therefore, would be the dominant factor determining the evolution of total credit. In the event that the supply of credit is completely interest-inelastic (as is sometimes claimed), the increase in interest rates following the removal of controls would still have a positive effect on growth by promoting a reallocation of credit toward the most productive activities. Note, by way of contrast, that a system with binding interest ceilings promotes the rationing of credit to the safest activities satisfying a minimum rate of return.

credit for income transfers developed among many borrowers in Nicaragua. Government declarations that such practices would not be repeated have had little apparent impact, moreover, given the rapid pace of expansion of the public banks' loan portfolios in spite of soaring real interest rates. It is not surprising, then, that the two largest public banks continued to have major loan recovery problems. They were bankrupt in 1991 and again reached a position of negative net worth in 1994, just two years after they had been fully recapitalized.

24. This experience suggests that high interest rates are not the main obstacle to growth in Nicaragua. Rather, the more important problem is the inefficiency of financial intermediation, which is mainly attributable to the mismanaged public banking system. All that the rise of real interest rates has done is to unveil more quickly the underlying weaknesses of the public banks.

V. Alternative Policy Options for Reducing Interest Rates

25. From the viewpoint of individual investors, there is no question that an environment with low real interest rates is always preferrable to one with high rates; all other things equal. Where questions arise is the extent to which Nicaragua's policymakers can influence real interest rates without generating other harmful side-effects. The remainder of this essay discusses several options and proposals for reducing interest rates, with special attention to such side-effects.

Reverse the Process of Financial Liberalization?

Since the elimination of interest rate controls permitted the rise in dollar-equivalent interest rates toward the rates observed internationally, it would appear that Nicaragua's rates could be reduced again simply by reintroducing controls and, thereby, severing the link with international financial markets.

26. This proposal would have many negative consequences: First, a state-ordered reduction of interest rates would lead to a rapid outflow of domestic deposits, attracted by the comparatively higher rates of return offered in other financial markets. To prevent this outflow, capital controls would have to be reimposed. While capital controls may have been temporarily effective some decades ago, many financial innovations since then have rendered such controls ineffective. The outflow of deposits would trigger a contraction of the money supply and, thus, ultimately reduce the supply of credit. Second, the imposition of interest rate ceilings would require the rationing of credit. Such a system would only achieve lower interest rates for the few lucky beneficiaries that happen to receive credit. The other investors that are rationed out of the market, would face higher interest rates than before the imposition of controls. Third, systems of credit rationing with interest rate ceilings do not encourage the allocation of credit to the most productive activities; see footnote 8. The adoption of this system, therefore, would reduce the rate of productivity growth and, thereby, the overall growth rate.

27. A common variant of this proposal is to consider schemes for directing credit to specific sectors that purportedly exhibit special growth potential. Arguments in favor of such a strategy assume that public sector bureaucrats are in a better position to identify potential growth sectors than bankers whose well-being depends directly on the successful identification of those sectors. The key question to be asked in this context is why private banks are not investing in these sectors. If institutional constraints or market impediments are shown to be important barriers, then logic dictates that attention should focus on the direct elimination of those barriers, rather

than on establishing compensatory distortions. Furthermore, this proposal ignores that money is fungible. That is, there is little guarantee that funds disbursed for particular activities will in fact be used for those activities in the absence of costly monitoring systems. The establishment of costly monitoring systems, on the other hand, would defeat the original purpose that had motivated this proposal, which is to reduce financial intermediation costs.

Reverse the Stabilization Process?

In liberalized financial markets, dollar-equivalent interest rates are mainly determined by international credit conditions. As shown earlier, however, Nicaragua's real interest rates were driven above dollar-equivalent rates by a process of real devaluation. It would appear, therefore, that real interest rates could be reduced by generating a real exchange rate appreciation; most easily by expanding aggregate demand.

28. This proposal suffers from several shortcomings that render it unsustainable: to maintain real interest rates below the international dollar-equivalent rate would require a continuing real appreciation of the currency. A continuing real appreciation would result in a deteriorating current account deficit of the balance of payments, which is unsustainable, unless Nicaragua could count on ever increasing aid inflows. However, all indications currently point toward further reductions of external aid flows, which will require further real depreciations. Under these circumstances, attempts to raise aggregate demand through expansionary fiscal or monetary policies would merely fuel runaway inflation, without any lasting impact on relative prices, including the real exchange rate. As past experiences in Nicaragua and elsewhere have shown, high inflation interferes with market signals (thereby promoting resource misallocation and lower growth) and imposes a high tax on society's poorest members, who are the least able to protect their assets from the ravages of inflation.

29. It would appear that the adverse balance of payments impact of a currency appreciation could be avoided by raising import barriers. This option also leads to a dead-end, however, since a continual real exchange rate appreciation would require an equally continual raising of tariff and non-tariff barriers. Such a strategy would progressively close off the economy and eventually choke off all trade with the rest of the world. It is difficult to imagine how such a strategy could be conducive to faster growth and rising living standards.

Maintain current policy settings.

The preceding reform-backtracking proposals all entail unacceptable economic and social drawbacks. Nicaragua is better off by just consolidating the market-oriented reforms that have already been implemented and waiting for them to exert their full effect. The real exchange rate will eventually stop depreciating when it reaches its equilibrium level. At that point, real interest rates will converge to the lower dollar-equivalent rates.

30. This is an economically viable strategy. Its main drawback is that it may take considerable time for real interest rates to fall, in part because of the time lags involved between

the implementation of adjustment measures and their impact.[9] A further complicating factor is Nicaragua's extremely high dependence on foreign aid. Its anticipated decline will require major adjustments in the trade balance deficit that, in turn, require major real exchange rate adjustments that would maintain real interest rates above dollar-equivalent rates.

31. To estimate the potential real exchange rate adjustment needed to reestablish a sustainable external balance, consider that Nicaragua's resource balance deficit in 1992 was about 30 percent of GDP. Total foreign donations and net concessional disbursements in 1992 amounted to US$ 650 million, or roughly US$ 160 per capita. This figure is about six times higher than the average per-capita aid inflow received by other low income countries (excluding China and India); World Development Report 1994. Assuming that the resource balance deficit declines in direct proportion to any aid decline, then the six-fold reduction in aid that would bring aid to Nicaragua in line with the international per-capita average for low income countries would require the trade balance deficit to fall to 5 percent of GDP. Using a simple simulation model of the Nicaraguan economy, Edwards (1992) estimated that a reduction in the trade balance to 5 percent of GDP over five years would require a real devaluation of between 35 and 55 percent. (Similar estimates of the required real devaluation were also obtained in an independent simulation exercise using the World Bank's Revised Minimum Standard Model; see World Bank, 1993.) By 1994, Nicaragua's resource balance deficit had already declined to 20 percent of GDP, in part helped by an improvement in the terms of trade on account of rising coffee prices. This reduction of the external deficit is about 40 percent of the total deficit reduction needed to reach the target rate of 5 percent of GDP. Therefore, based on the parameter settings of Edwards' (1992) model, the real exchange rate would have to increase by an additional amount of between 21 to 33 percent. If this adjustment is spread out over five years, it would imply an annual real devaluation between 4.2 and 6.6 percent. These rates represent the difference by which real interest rates would exceed on average the dollar-equivalent interest rates under these preceding assumptions. That is, if dollar-equivalent interest rates were to remain at around 20 percent per annum over the next five years, real rates would be expected to average around 25 percent over that period. If aid inflows decline more gradually (rapidly) than assumed here, the adjustment process would be spread out over a longer (shorter) time period, resulting in a lower (higher) real interest rate.

Deepen Financial Sector Reforms.

The interest rate decomposition shown in Table 3 indicates that the most important determinants of the dollar-equivalent interest rate are the lending spreads charged by the commercial banks and the market's confidence in the domestic currency, as measured by CRED. Since the adjustment process described previously takes so long, can anything be done to reduce these determinants and, thereby, hasten the decline of interest rates without adverse side-effects?

32. Of the various factors that determine lending spreads, the high administrative costs of Nicaragua's commercial banks deserve particular attention. In 1992-94, administrative costs

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9. In Chile, as one of the earliest and most successful reformers, it took about two years for real interest rates to return to prior levels after the introduction of adjustment measures in the early 1980s; see Galbis (1993). Rodriguez (1994) also notes that, for those countries in his sample experiencing adjustment programs, it took more than two years for real interest rates to stop adjusting after their initial rise in response to the adjustment measures.

averaged about 6 percent of total commercial bank assets in Nicaragua (**Annex C**). This is high by international standards for developing countries, where a ratio of 2-3 percent is considered acceptable for countries with low inflation. A reduction of administrative costs from 6 to 3 percent of total assets, therefore, could yield a reduction in lending spreads by at least 3 percentage points, assuming that such cost savings are passed on to bank customers. Vigorous competition in the banking system offers the best prospect, both, for promoting administrative cost reductions and ensuring that those reductions are translated into lower lending spreads.

Privatizing the public banks

33. The current structure of Nicaragua's banking system is not conducive to such efficiency improvements, however. Studies on optimal scale in banking indicate that scale economies are exhausted when a bank's total assets reach a range of US$100-200 million (see, e.g., Guasch 1994). As of December 1994, the total assets of Nicaragua's commercial banking system amounted to US$ 890 million, which would sustain between 4 and 8 optimally scaled commercial banks. Under the current banking structure, however, the three public banks account for almost 60 percent of total banking system assets, while the remaining 40 percent is divided up among 9 privately owned banks, the largest of which has assets of about US$ 70 million, which is well below the optimal scale. While the merger of several private banks could lead to the creation of two or three optimally scaled banks, this number is too small to ensure proper competition. That is, on the reasonable assumption that the public banks will continue to operate inefficiently, it would be easy for these few private banks to collude and retain any cost savings as profits rather than passing them on to their customers in the form of lower interest rate spreads. The private banks have been expanding rapidly and over time are expected to overtake the public banking system in asset size. This process could be accelerated, however, by privatizing the public banks. That would hasten the creation of more efficiently scaled banks that are likely to behave competitively, which is needed to ensure that the economies of scale are passed on to customers in the form of reduced lending rates.[10] There are, moreover, no major economic drawbacks from adopting this option. Instead, further gains could be had by eliminating the fiscal burden currently generated by the loss-making public banks.

Promoting greater monetary integration

34. Another way of reducing real interest rates would be to adopt the US Dollar as the national currency. According to **Table 3**, such a step would immediately reduce dollar-equivalent interest rates by the amount of the variable, **CRED**; i.e., by 5 to 6 percentage points. Domestic borrowers, in principle, already have this option, given the advanced level of currency substitution that has taken place in Nicaragua. About one-half of all commercial bank deposits are currently dollar-denominated. On the other hand, only about 19 percent of all domestic loans are dollar-denominated, even though the interest rate charged on such loans is much lower than on Cordoba-denominated loans; see footnote 3. Rates on dollar-denominated loans are 4 to 6 percentage points below the average dollar-equivalent rate quoted for Cordoba-denominated loans. Since Cordoba-denominated loans are fully indexed to the US Dollar, the only factor that

10. The creation of more private banks provides no guarantee that they will behave competitively, but it does render collusive behavior more difficult and by that token contributes to promoting greater competition in the sector.

can explain this interest rate difference is the perceived commitment by the Nicaraguan monetary authorities to maintain the Cordoba pegged and convertible vis-a-vis the US Dollar.

35. The adoption of an official dollarization policy, along the lines of the Panamanian system, for example, would represent the strongest commitment to a fixed parity on the part of the Nicaraguan authorities. Other institutional arrangements that reflect a relatively weaker commitment range from establishing a Currency Board (as in Singapore and proposed in El Salvador), to fixing the exchange rate through the Central Bank (as in Argentina), to the existing system of indexation in Nicaragua. The main drawbacks of tying the domestic currency to the US Dollar are reduced seigniorage and a curtailed flexibility to conduct an independent monetary policy and to serve as lender of last resort. The decision to index the Cordoba to the US Dollar already indicates that the Nicaraguan authorities have relinquished, in principle, any ambitions to conduct an independent monetary policy. In wishing to retain enough flexibility to function as lender of last resort in the event of a financial crisis, however, the monetary authorities would be qualifying their commitment to a fixed parity, since exercising the lender-of-last-resort function (by issuing fiat money, rather than transferring real resources from the fiscal budget) would effectively mean giving up the exchange rate peg. Similarly, while an official dollarization strategy would eliminate revenues from seigniorage[11], a Currency Board system would permit some seigniorage revenues through the interest received on the foreign reserves that back up the local currency. The seigniorage obtained under the Currency Board, however, will generally be less than the amount obtainable under an adjustable peg system, given that the reserve center's inflation rate is likely to be less than Nicaragua's revenue-maximizing inflation rate. In general, then, there is a trade-off between greater seigniorage or monetary autonomy and a greater commitment to a fixed exchange rate, reflected in the regime adopted to maintain that rate. This trade-off translates into a choice between greater monetary flexibility and lower interest rates.[12]

VI. Concluding Summary

36. The preceding discussion pointed out that renewed destabilization or backtracking on previous market liberalizing reforms do not offer a promising path toward lower interest rates. A preferable alternative is to simply focus on maintaining macroeconomic stability and wait until past structural reforms exert their full effect on interest rates. Under this option, Nicaragua can

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11. These seigniorage revenues are not entirely eliminated, but rather would be captured by the producer of the reserve currency. Seigniorage revenues are defined as $S = [M(t+1) - M(t)]/P(t) \equiv DM(t)/P(t)$, where M(t) is the monetary base at the end of period t. This expression can be rewritten and expressed as a share of real GDP as $S/Y = \{DM(t)/M(t)][M(t)/P(t)*Y(t)]$, where Y denotes the level of GDP. A rough estimate of the magnitudes involved can be obtained by calculating the seigniorage revenues generated under the "steady-state" assumption that the inflation rate is equal to the rate of growth of the monetary base minus the rate of real output growth; i.e., $[DM(t)/M(t)] = [DP(t)/P(t)] + [DY(t)/Y(t)]$. The monetary base was equal to 8 percent of GDP in December 1994, while the rate of output growth and inflation in 1994 were 3 percent and 12.4 percent, respectively. Using these parameter values yields an estimate of annual seigniorage revenues equivalent to 1.2 percent of GDP. While these revenues are not negligible, their order of magnitude in not such that their elimination would necessarily lead to a fiscal crisis for lack of alternative taxation sources.

12. A further consideration for the medium term is that the adoption of an official dollarization policy or a Currency Board mechanism would render Nicaragua more attractive as an operating environment for foreign banks. To the extent that foreign banks are attracted to operate in Nicaragua, interest rates would fall as increased competition in the banking sector drives down lending spreads. This consideration becomes especially relevant to the extent that there exist Constitutional or other legal impediments to the privatization of the public banks.

expect to have the same dollar-equivalent and real interest rates observed on average in other Latin American countries. An even better outcome is available, however, through additional structural reforms; namely by privatizing the public banks and adopting a monetary regime that expresses a stronger pre-commitment to a fixed exchange rate. The increased competition generated by privatizing the public banks could reduce average commercial bank lending spreads by half, or at least 3 percentage points, while fixing the Cordoba more tightly to the US Dollar, could reduce risk premia by about 5 percentage points. On the assumption that the average dollar-equivalent lending rates in Latin America remain near the current level of 20 percent, Nicaragua could expect to reduce lending rates to 12 percent with the adoption of both reforms. Whatever level the dollar-equivalent lending rates may ultimately turn out to be, real interest rates will exceed that level by an amount equal to the rate of real devaluation. In the absence of further terms of trade improvements, real devaluations will be needed in response to prospective foreign aid declines, independently of whether a Currency Board system or US Dollar standard is adopted. That is, the adoption of a different monetary system would not obviate the need for relative price adjustments.

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ANNEX A

A Theoretical Framework for Understanding Real Exchange Rate Determination

Consider a small open economy with three aggregated categories of goods: exportables, importables and non-traded domestic goods. Their nominal prices in domestic currency are respectively denoted P_x, P_m and P_h. Since the external prices of both traded goods, denoted P_x^* and P_m^*, are not affected by developments within the small home economy, their corresponding internal prices can be assumed to equal the external price converted into domestic currency at the prevailing exchange rate and adjusted for the level of tariffs and quantitative restrictions. That is,

$$P_m = P_m^*E(1 + tm), \text{ and } P_x = P_x^*E(1 - tx),$$

where E represents the nominal exchange rate, tm denotes the average level of import duties and non-tariff import restrictions expressed as an ad-valorem tariff-equivalent rate, and tx denotes the average level of export taxes and non-tariff export restrictions, also expressed as an ad-valorem tariff-equivalent rate. The price of the non-traded good, on the other hand, is determined by domestic supply and demand conditions, described by the following functional relationship:

$$D_h[P_x, P_m, P_h]A - S_h[P_x, P_m, P_h]Y = 0, \quad (A.1)$$

where A represents the level of domestic absorption and Y represents domestic GDP, both in nominal terms. Assuming that real demands and supplies are homogeneous of degree zero with respect to all nominal prices, and dividing through by Y, Equation A.1 can be expressed as:

$$D_h[P_m/P_h, (P_x/P_m)(P_m/P_h)](1 - TS) = S_h[P_m/P_h, (P_x/P_m)(P_m/P_h)], \quad (A.2)$$

where TS denotes the ratio of the trade surplus to GDP, such that (1 - TS) represents the ratio of domestic absorption to GDP. Equation (A.2) expresses an equilibrium relationship between the real exchange rate applicable to importables, (P_m/P_h), the internal terms of trade, (P_x/P_m), and the trade surplus as a ratio of GDP, TS. This relationship can be written in linear-logarithmic form as:

$$Ln(P_m/P_h) = a_0 + a_1Ln(P_x/P_m) + a_2TS, \quad (A.3)$$

such that Ln(.) denotes the natural logarithm of the attached variable. By subtracting $Ln(P_m)$ and adding $Ln(P_x)$ to both sides of Equation (A.3), an equivalent expression is obtained for the real exchange rate applicable to exportables:

$$Ln(P_x/P_h) = a_0 + (a_1 + 1)Ln(P_x/P_m) + a_2TS, \quad (A.4)$$

According to this framework, all variables relevant in the determination of the real exchange rate are captured by the internal terms of trade and by the trade surplus ratio. The internal terms of trade, (P_x/P_m), may be considered an exogenous variable, since it is

entirely determined by the external terms of trade and trade policy parameters set by the government. On the other hand, the trade surplus ratio and each of the real exchange rates are endogenous variables, simultaneously determined by a broader set of economic relationships. In this context, it is useful to regard **TS** as essentially a macroeconomic phenomenon determined primarily by the public sector deficit and private sector savings and spending behavior that, in turn, are determined by other variables. From this perspective, Equations (A.3) or (A.4) may be interpreted as determining the equilibrium value of P_h. Furthermore, the value of the TS-coefficient, a_2, is assumed a priori to be positive, based on the following reasoning: an increase in domestic absorption relative to income reduces the trade surplus and increases the demand for non-tradeables as well as tradeables. This puts pressure on P_h to increase (while P_m and P_x remain constant since they are determined abroad), thus causing both real exchange rates, (P_m/P_h) and (P_x/P_h), to appreciate. Conversely, as argued earlier in paragraph 17, a reduction of the trade deficit motivated by reduced foreign aid inflows calls for an increase in **TS** and a devaluation of the real exchange rates.

ANNEX B

Data Sources and Definitions

The dollar-equivalent and real interest rates presented in this report are based on the attached monthly series for nominal interest rates, domestic price levels and exchange rates that were obtained from each country's Central Bank. For all countries, the exchange rate refers to the average buy and sell rate in the banking market for foreign exchange and the domestic price data refers to the Consumer Price Index. There are some differences, however, in the lending rates obtained for each country: they refer to short-term loans with maturities of up to one year in the case of El Salvador and Nicaragua, to new commercial loans for "other" (non-agricultural) activities in Costa Rica, and all commercial bank loans in Guatemala and Honduras. Furthermore, in the case of El Salvador, Nicaragua and Costa Rica (before May 1992) borrowing and lending rates refer to arithmetic averages of the maximum and minimum rates quoted by all banks, whereas in the other countries they refer to weighted average rates. These differences in financial instruments and aggregation procedures are significant, but not enough to invalidate the type of interest rate comparisons made earlier in this report.

Calculatation of Dollar-Equivalent and Real Interest Rates

The ex post real and dollar-equivalent lending and borrowing rates presented in the report are all calculated under the assumption of three-month maturities for all loans and deposits. This procedure is consistent with the method applied in Rodriguez (1994) and consists of the following steps: Let i(t) denote the average annualized interest rate quoted in month t, while P(t) is the value of the Consumer Price Index in month t and E(t) is the average exchange rate in month t. The monthly interest rate corresponding to this annualized rate is then defined as,

$$i^{m}(t) = [\text{Exp}[\text{Ln}[1+i(t)]/12]] - 1.$$

The ex post rates of devaluation and of inflation corresponding to the assumed three-month horizon are derived as,

$$e^{q}(t) = [E(t+3)/E(t)] - 1,$$

and

$$p^{q}(t) = [P(t+3)/P(t)] - 1.$$

Each of these quarterly average rates of change is then transformed into a monthly average rate as,

$$e^{m}(t) = [\text{Exp}[\text{Ln}[1+e^{q}(t)]/3]] - 1,$$

and

$$p^{m}(t) = [\text{Exp}[\text{Ln}[1+p^{q}(t)]/3]] - 1.$$

Using these derived variables, the monthly dollar-equivalent interest rate is defined as

$$d^m(t) = [i^m(t) - e^m(t)],$$

and the monthly real interest rate is defined as

$$r^m(t) = [i^m(t) - p^m(t)].$$

To finally arrive at the figures presented and analyzed in the main text of the report, these monthly rates are transformed into annual rates as:

$$d(t) = [\text{Exp}[12*\text{Ln}[1+d^m(t)]]] - 1,$$

and

$$r(t) = [\text{Exp}[12*\text{Ln}[1+r^m(t)]]] - 1.$$

COSTA RICA	Lending Rate	Deposit (1month) savings	Rates (3 month) accounts	Exchange Rate	Consumer Price Index
Jan-91	40.48	30.40	35.99	105.82	102.52
Feb-91	44.25	30.25	33.97	109.54	105.54
Mar-91	44.50	30.25	34.24	113.69	106.88
Apr-91	43.28	30.60	33.76	117.15	109.90
May-91	44.50	29.40	33.70	119.85	111.80
Jun-91	43.73	26.30	30.16	122.64	114.15
Jul-91	42.50	26.30	30.44	124.82	116.62
Aug-91	43.00	26.30	30.57	127.39	118.26
Sep-91	42.68	25.30	30.48	129.41	120.15
Oct-91	44.00	25.00	31.39	131.23	121.54
Nov-91	43.92	24.50	31.52	132.95	123.32
Dec-91	42.37	23.80	31.12	134.69	125.32
Jan-92	38.80	22.80	28.67	136.35	130.27
Feb-92	39.00	25.00	25.55	137.28	133.21
Mar-92	35.81	19.30	18.88	135.01	134.80
Apr-92	32.50	19.02	19.03	132.75	137.41
May-92	28.44	15.49	15.94	130.26	138.69
Jun-92	24.69	14.14	14.40	127.83	140.39
Jul-92	26.55	17.93	17.12	134.35	141.22
Aug-92	27.16	17.93	17.12	134.62	142.00
Sep-92	27.12	17.93	16.85	135.59	142.55
Oct-92	28.99	18.48	18.34	136.23	143.51
Nov-92	29.08	18.48	19.43	136.69	145.19
Dec-92	29.35	20.65	20.38	137.11	146.58
Jan-93	29.64	18.48	19.57	137.72	147.18
Feb-93	29.54	19.02	19.30	138.35	148.02
Mar-93	28.41	17.39	16.74	138.21	148.54
Apr-93	27.98	15.22	15.04	138.20	150.02
May-93	27.74	15.22	15.43	138.20	151.48
Jun-93	28.21	19.02	17.93	139.76	153.45
Jul-93	31.24	20.65	21.73	141.40	155.14
Aug-93	35.18	22.83	26.15	143.02	155.71
Sep-93	36.61	24.46	25.68	144.95	156.19
Oct-93	37.38	25.54	26.49	146.79	157.69
Nov-93	37.93	25.00	26.63	148.80	159.40
Dec-93	37.54	25.00	26.22	150.67	160.83
Jan-94	35.95	23.91	23.82	151.88	162.23
Feb-94	34.81	23.91	23.10	152.77	164.18
Mar-94	35.10	22.83	21.74	153.48	166.31
Apr-94	34.32	21.74	21.74	154.17	167.92
May-94	34.38	22.28	22.69	154.76	170.21
Jun-94	34.43	22.28	22.46	155.59	172.98
Jul-94	34.60	22.55	22.42	156.78	174.57
Aug-94	34.64	22.01	22.97	157.98	177.79
Sep-94	34.92	23.10	22.01	159.34	181.59
Source: Central Bank of Costa Rica					
Until April 1992, the lending rate refers to the average of the maximum and minimum					
rates quote by private banks for "other activities" on the last Wednesday of each					
month. After April 1992, it refers to the weighed average rate for all such loans.					

EL SALVADOR	Lending Rate	Deposit Rate (2 month) saving deposits	Exchange Rate	Consumer Price Index
Jan-91	22.00	14.50	8.06	793.50
Feb-91	22.00	14.50	8.06	796.10
Mar-91	22.00	14.50	8.00	807.40
Apr-91	20.00	16.00	8.00	811.60
May-91	20.00	14.13	8.00	825.60
Jun-91	20.00	14.34	8.00	832.40
Jul-91	20.00	14.20	8.01	852.40
Aug-91	20.00	14.36	8.01	853.90
Sep-91	20.00	14.17	8.03	855.60
Oct-91	20.00	14.13	8.12	856.11
Nov-91	18.00	12.75	8.14	850.67
Dec-91	18.00	12.75	8.13	855.12
Jan-92	17.92	11.71	8.13	860.15
Feb-92	16.17	11.01	8.17	862.18
Mar-92	16.00	10.89	8.20	867.96
Apr-92	16.00	10.43	8.20	877.34
May-92	15.96	10.31	8.20	880.92
Jun-92	15.96	10.38	8.24	891.50
Jul-92	15.96	10.46	8.39	908.66
Aug-92	15.96	10.48	8.44	935.02
Sep-92	16.00	10.56	8.54	978.81
Oct-92	16.03	10.96	8.65	1001.65
Nov-92	16.57	12.83	9.01	1019.95
Dec-92	17.91	15.46	8.76	1025.29
Jan-93	18.84	16.13	8.76	1047.66
Feb-93	19.45	15.51	8.80	1046.68
Mar-93	19.63	15.04	8.76	1052.83
Apr-93	20.33	15.05	8.75	1057.19
May-93	20.52	15.47	8.74	1070.31
Jun-93	19.96	16.32	8.76	1099.22
Jul-93	19.44	15.24	8.75	1122.19
Aug-93	19.22	14.30	8.72	1123.89
Sep-93	19.05	13.60	8.69	1123.67
Oct-93	18.68	13.00	8.71	1136.87
Nov-93	18.73	13.01	8.71	1138.27
Dec-93	18.79	13.04	8.74	1152.42
Jan-94	18.69	13.04	8.74	1173.38
Feb-94	18.73	13.04	8.75	1177.52
Mar-94	18.62	13.00	8.75	1186.54
Apr-94	18.74	13.00	8.75	1196.74
May-94	18.92	13.01	8.75	1196.61
Jun-94	19.00	13.18	8.75	1206.94
Jul-94	19.14	13.26	8.75	1216.46
Aug-94	19.08	13.08	8.75	1232.91
Sep-94	19.08	12.54	8.76	1231.54
Source: Central Bank of El Salvador				

GUATEMALA	Lending Rate	Deposit Rate (1 month) savings deposit	Exchange Rate	Consumer Price Index
Jan-91	23.10	14.70	4.97	435.10
Feb-91	23.60	15.00	5.09	433.50
Mar-91	24.10	15.30	5.04	434.10
Apr-91	24.30	15.40	4.98	440.00
May-91	24.40	15.90	4.92	444.80
Jun-91	24.40	15.80	4.95	448.60
Jul-91	24.40	15.90	5.00	449.60
Aug-91	24.40	15.90	5.05	456.30
Sep-91	24.40	16.00	5.02	453.10
Oct-91	24.30	16.00	5.11	453.60
Nov-91	22.80	14.60	5.08	456.00
Dec-91	22.10	14.00	5.06	462.00
Jan-92	21.10	12.90	5.09	464.00
Feb-92	19.90	10.70	5.19	468.80
Mar-92	18.90	9.80	5.14	477.70
Apr-92	18.40	9.80	5.06	481.40
May-92	18.20	9.40	4.97	485.00
Jun-92	18.60	9.20	5.09	488.70
Jul-92	18.80	10.00	5.15	496.50
Aug-92	19.20	10.30	5.23	500.40
Sep-92	19.60	10.50	5.31	503.80
Oct-92	20.10	10.70	5.32	506.10
Nov-92	20.50	10.90	5.31	516.20
Dec-92	21.30	11.10	5.33	527.70
Jan-93	21.60	11.10	5.29	530.20
Feb-93	23.50	11.80	5.36	531.30
Mar-93	24.40	12.30	5.44	535.20
Apr-93	24.90	12.60	5.50	542.60
May-93	24.60	12.50	5.57	545.80
Jun-93	25.00	12.70	5.64	559.00
Jul-93	25.30	12.60	5.74	572.30
Aug-93	25.40	12.60	5.78	573.70
Sep-93	25.40	12.90	5.85	571.20
Oct-93	25.50	13.10	5.87	574.50
Nov-93	25.60	13.10	5.86	582.00
Dec-93	25.70	13.30	5.79	589.10
Jan-94	26.00	13.20	5.86	601.70
Feb-94	25.60	13.00	5.86	607.40
Mar-94	24.50	11.20	5.83	610.90
Apr-94	24.30	11.20	5.79	618.10
May-94	24.20	11.00	5.75	623.00
Jun-94	23.90	10.60	5.74	624.90
Jul-94	23.00	8.80	5.66	627.80
Aug-94	21.10	7.80	5.68	635.30
Sep-94	19.60	6.70	5.80	639.60
Oct-94	19.10	6.70		
Source: Central Bank of Guatemala				

HONDURAS	Lending Rate	Deposit (1month) savings	Rate (3 month) deposit	Exchange Rate	Consumer Price Index
Jan-91	20.30	8.80	10.70	5.30	104.10
Feb-91	20.30	8.80	10.70	5.30	107.74
Mar-91	20.30	8.80	10.70	5.30	109.14
Apr-91	22.00	9.40	11.40	5.30	112.75
May-91	22.00	9.40	11.40	5.30	114.10
Jun-91	22.00	9.40	11.40	5.30	116.15
Jul-91	22.00	9.60	11.80	5.30	118.01
Aug-91	22.00	9.60	11.80	5.30	119.55
Sep-91	22.00	9.60	11.80	5.30	120.02
Oct-91	23.20	9.80	11.90	5.30	121.22
Nov-91	23.20	9.80	11.90	5.40	122.19
Dec-91	23.20	9.80	11.90	5.40	122.44
Jan-92	22.20	9.90	16.10	5.40	122.68
Feb-92	22.50	9.90	16.10	5.40	124.03
Mar-92	22.40	9.80	15.90	5.40	124.28
Apr-92	22.20	9.90	15.80	5.40	125.52
May-92	21.70	9.80	15.40	5.40	126.03
Jun-92	21.70	9.70	15.20	5.44	126.15
Jul-92	22.20	9.40	15.20	5.49	126.91
Aug-92	21.70	9.80	15.50	5.54	127.16
Sep-92	21.70	9.20	14.80	5.60	127.29
Oct-92	21.00	9.20	13.80	5.74	127.80
Nov-92	21.00	9.30	13.60	5.82	129.33
Dec-92	20.70	9.20	13.80	5.83	130.50
Jan-93	20.70	9.20	13.60	5.82	131.15
Feb-93	20.70	9.10	13.40	5.85	132.46
Mar-93	20.70	9.40	13.50	5.85	133.52
Apr-93	20.70	9.10	13.30	5.90	136.06
May-93	21.10	9.20	13.30	5.05	137.14
Jun-93	21.00	9.20	13.30	6.35	139.34
Jul-93	23.20	9.20	13.50	6.61	143.52
Aug-93	23.20	9.20	13.50	6.80	145.10
Sep-93	23.20	9.20	13.90	6.90	145.97
Oct-93	23.40	9.20	14.00	6.92	146.99
Nov-93	23.40	9.20	14.00	7.11	148.46
Dec-93	23.40	9.20	14.00	7.29	149.35
Jan-94	23.30	9.20	14.80	7.27	151.44
Feb-94	23.30	9.30	15.30	7.43	155.99
Mar-94	23.30	9.30	15.00	7.57	157.55
Apr-94	23.40	9.20	15.00	7.81	161.96
May-94	23.30	9.10	14.90	8.07	168.27
Jun-94	24.00	9.50	14.80	8.48	171.64
Jul-94				8.73	176.27
Aug-94				8.87	179.97
Sep-94				9.04	181.23
Source: Central Bank of Honduras					

NICARAGUA	Lending Rate	Deposit (1month) Cordoba savings accounts	Rates (1 month) US$ savings accounts	Official Exchange Rate	Consumer Price Index	US Treasury Bill Rate	Exchange Rate Spread
Mar-91	18.00	12.00	7.00	5.00	80.81	5.91	0.05
Apr-91	18.00	15.00	7.00	5.00	97.21	5.67	0.05
May-91	18.00	12.00	7.00	5.00	90.99	5.51	0.05
Jun-91	18.00	12.00	5.88	5.00	93.92	5.60	0.05
Jul-91	18.00	12.00	5.88	5.00	94.67	5.58	0.05
Aug-91	18.00	12.00	5.88	5.00	93.20	5.39	0.05
Sep-91	18.00	12.00	5.50	5.00	94.24	5.25	0.05
Oct-91	18.00	12.00	5.31	5.00	99.24	5.03	0.04
Nov-91	18.00	12.00	5.06	5.00	100.09	4.60	0.04
Dec-91	18.00	12.00	4.50	5.00	100.00	4.12	0.05
Jan-92	18.00	12.00	4.50	5.00	101.07	3.84	0.03
Feb-92	18.00	12.00	4.50	5.00	100.37	3.84	0.03
Mar-92	16.83	13.16	5.40	5.00	100.40	4.05	0.03
Apr-92	19.49	12.67	5.07	5.00	100.95	3.81	0.03
May-92	19.44	13.18	4.95	5.00	102.44	3.66	0.04
Jun-92	19.97	12.54	4.80	5.00	101.50	3.70	0.06
Jul-92	20.22	11.63	4.79	5.00	100.62	3.28	0.07
Aug-92	19.91	11.65	4.76	5.00	100.08	3.14	0.09
Sep-92	20.34	11.30	4.98	5.00	99.92	2.97	0.09
Oct-92	20.26	11.20	4.98	5.00	101.15	2.84	0.09
Nov-92	20.23	11.30	4.98	5.00	103.06	3.14	0.09
Dec-92	20.30	11.30	5.03	5.00	103.51	3.25	0.06
Jan-93	20.00	11.59	4.99	5.72	113.11	3.06	0.04
Feb-93	20.07	11.59	5.00	6.03	121.90	2.95	0.01
Mar-93	20.22	11.67	5.03	6.05	121.59	2.97	0.01
Apr-93	20.14	11.74	5.04	6.08	121.32	2.89	0.01
May-93	20.18	11.75	5.04	6.10	122.51	2.96	0.01
Jun-93	20.24	11.69	5.07	6.13	120.79	3.10	0.01
Jul-93	20.35	12.06	5.20	6.15	122.94	3.05	0.02
Aug-93	20.35	12.02	5.32	6.18	123.20	3.05	0.04
Sep-93	20.35	12.04	5.45	6.20	123.89	2.96	0.03
Oct-93	20.10	12.23	5.49	6.23	124.02	3.04	0.02
Nov-93	20.25	12.43	5.51	6.26	123.88	3.12	0.02
Dec-93	20.25	12.38	5.51	6.32	123.65	3.08	0.02
Jan-94	20.24	12.54	5.56	6.38	125.08	3.02	0.03
Feb-94	20.20	11.28	5.56	6.44	126.04	3.21	0.02
Mar-94	20.05	11.33	5.60	6.50	126.65	3.52	0.01
Apr-94	20.00	12.21	5.66	6.56	127.04	3.74	0.01
May-94	20.50	11.07	5.65	6.62	127.82	4.21	0.02
Jun-94	20.50	11.59	5.76	6.69	130.65	4.13	0.03
Jul-94	20.45	11.11	5.76	6.75	130.57	4.26	0.05
Aug-94	20.45	11.26	5.35	6.82	132.72	4.55	0.05
Sep-94	20.04	11.53	5.78	6.88	134.88	4.68	0.04

Source: Central Bank of Nicaragua

Memo: Since Nicaragua's Cordoba-denominated interest rates are indexed at the Official Exchange Rate (OERate), the nominal interest rates are calculated as (1 + i)(1 + OERate) to conform with the data definitions used in this report. Dollar equivalent rates are then derived by deflating with the Parallel Market exchange rate, defined as the Official Exchange Rate times one plus the Exchange Rate Spread.

NICARAGUA

Saldos de Credito: FNI y Bancos Comerciales

Millones de Cordobas Corrientes

	Mar-91	Jun-91	Sep-91	Dec-91	Mar-92	Jun-92	Sep-92	Dec-92	Mar-93	Jun-93	Sep-93	Dec-93	Mar-94	Jun-94	Sep-94
FNI (Total)	658.6	808.5	895	1124	1211.1	1268.9	1255.1	1386.1	1614.4	1631.6	1670.7	740.9	864.5	876	946.8
Credito Directo	649.9	754.9	914.2	1011.4	1082.5	1085	1045.4	1014.1	1120.1	1238.5	1142.2	0	0	0	0
Credito Intermediado	8.7	48.6	80.8	112.6	128.6	182.9	209.7	372	494.3	493.1	528.5	740.9	864.5	876	946.8
Banco Comerciales	1209.8	1316.7	1592.4	1846.1	1910.1	1376.8	1779.2	2046.9	2347.1	2656.9	2855.1	3049.6	3125	3363	3711.5
Credito Directo	801.3	1006.1	1317.1	1590.8	1645	1134.9	1760.1	2035.2	2333.7	2639.7	2852.9	3037.2	3113.3	3351.4	3699.6
Credito Intermediado	408.5	310.6	276.3	255.3	265.1	241.9	19.1	11.7	13.4	17.2	13.2	12.4	11.7	11.6	11.9
Total Cred. Prod.	1451.2	1761	2231.3	2602.2	2727.6	2220.9	2805.5	3049.3	3453.8	3778.2	3995.1	3037.2	3113.3	3351.4	3699.6
Tasa de Cambio (C$/US$)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.1	6.1	6.2	6.3	6.5	6.7	6.9
IPC	87.8	92.5	92.9	100.0	100.4	101.5	99.0	103.5	121.6	120.8	123.9	123.7	126.7	130.7	134.9
Crédito Total al Sector Privado por la Banca Comercial (en Cordobas Constantes de Diciembre 1991)															
	912.6	1087.7	1417.8	1590.8	1638.6	1118.1	1777.9	1966.2	1919.3	2185.2	2302.8	2456.3	2458.2	2565.0	2742.5
Source: Central Bank of Nicaragua															

ANNEX C

Table C.1
COMMERCIAL BANKING SYSTEM OF NICARAGUA
Consolidated Balances as of December 31 of year indicated
(in millions of current Cordobas)

	Consolidated Commercial Banking System			Public Banks			Private Banks		
	1992	1993	1994	1992	1993	1994	1992	1993	1994
Total ASSETS	**3077**	**4424**	**6325**	**2317**	**3012**	**3621**	**760**	**1412**	**2704**
Reserves	518	559	873	327	245	360	192	315	512
Dep. in other banks	184	254	328	98	92	68	85	161	261
Loans	1879	2819	3750	1536	2151	2318	343	668	1432
Other Assets	496	792	1374	356	524	875	140	268	499
Total LIABILITIES	**2869**	**4132**	**6016**	**2194**	**2845**	**3490**	**675**	**1287**	**2526**
Loanable Funds	2496	3639	5458	1887	2465	3184	609	1175	2274
Deposits	1484	2104	3497	930	1037	1519	553	1067	1978
Credit Lines	1012	1535	1961	957	1428	1665	56	108	296
Other Liabilities	373	493	558	307	380	306	66	112	252
Net Worth	**208**	**291**	**310**	**123**	**166**	**132**	**86**	**125**	**178**

Source: Superintendencia de Bancos, Nicaragua, Informe Anual, 1994

Memo item: the official exchange rate (C/US$) as of December 31 of each year is 5 in 1992, 6.3497 in 1993 and 7.1117 in 1994.

Table C.2
COMMERCIAL BANKING SYSTEM OF NICARAGUA
Consolidated Income Statement as of December 31 of year indicated
(in percent of total assets)

	Consolidated Commercial Banking System			Public Banks			Private Banks		
	1992	1993	1994	1992	1993	1994	1992	1993	1994
Total INCOME	**13.4**	**15.1**	**12.8**	**14.7**	**15.4**	**13.2**	**9.4**	**14.5**	**12.1**
Financial Inc. (accr.)	8.7	10.1	8.5	9.9	11.3	9.7	5.0	7.5	6.9
Non-financial Inc.	2.9	2.7	3.3	2.5	1.8	2.4	4.3	4.5	4.5
Portfolio Clean-up	1.7	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0
Net Gains from Exchange Rate Adj.	0.0	2.3	1.0	0.0	2.3	1.1	0.0	2.5	0.7
Total OUTLAYS	**13.0**	**13.4**	**12.6**	**14.4**	**14.1**	**13.8**	**8.9**	**11.9**	**10.9**
Financial (int.) Costs	5.8	5.5	5.5	6.8	6.3	6.7	2.5	3.9	3.8
Administrative Costs	7.0	6.1	5.5	7.4	5.9	5.7	5.7	6.7	5.3
Loan Provision Costs	0.1	1.4	1.0	0.0	1.8	1.0	0.3	0.8	0.9
Other Expenditures	0.2	0.4	0.6	0.2	0.1	0.4	0.5	0.6	0.9
Net Earnings before Taxes	**0.4**	**1.7**	**0.2**	**0.3**	**1.2**	**-0.6**	**0.5**	**2.6**	**1.2**

Source: Superintendencia de Bancos, Nicaragua, Informe Anual, 1994

ANNEX D

LENDING RATES IN SOUTH AMERICA AND MEXICO

Country	Dollar-equivalent Rate	Real Rate
Average Rates on local Currency Loans in 1992 (in %)		
Argentina	36.4	21.6
Bolivia	33.7	32.4
Chile	9.0	9.6
Colombia	20.2	10.6
Mexico	29.0	17.6
Peru	52.8	77.0
Uruguay	62.5	39.7
Arithmetic Average:		
including Peru	34.8	29.8
excluding Peru	31.8	21.9
Countries with Recent Adjustment Programs (annual average rate in the year indicated)		
Argentina (1991)	51.0	76.0
Bolivia (1987)	46.0	46.0
Peru (1992)	53.0	77.0
Mexico (1988)	84.0	45.0
Source: Rodriguez (1994)		

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