

Policy, Research, and External Affairs

**WORKING PAPERS**

Debt and International Finance

International Economics Department  
The World Bank  
March 1990  
WPS 393

# Debt-for-Nature Swaps

Michael Occhiolini

If the spending priorities of the debtor country and donor are the same, these swaps can help debtor countries. But sometimes they do not make fiscal sense. And the future of these swaps may be limited by the Brady Plan's current emphasis on debt reduction.

This paper — a product of the Debt and International Finance Division, International Economics Department — is part of a larger effort in PRE to analyze alternative forms of debt and debt service reduction operations available to developing countries and to assess the potential costs and benefits of these operations. Other analysis along these lines includes studies of debt-equity swaps and of market-based voluntary debt reduction exercises. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Sheila King-Watson, room S8-025, extension 31047 (34 pages).

Of the three participants in debt-for-nature swaps, international environmental groups benefit the most. These swaps leverage the original donation amount by the difference between the secondary market value and the redemption value of the debt.

As the difference between the redemption and secondary market value declines over time, the environmental group benefits less.

Without further changes in the tax and regulatory environment, there is little reason — except good publicity — for commercial banks to donate their debt to environmental groups. They can realize more by selling their debt on the secondary market.

The debtor country subsidizes the swap by the difference between the redemption value and secondary market of the debt. There is controversy about whether the debtor country benefits

from buying back its debt at the secondary market price — let alone at the higher redemption rate usually offered in debt-for-nature swaps.

From a fiscal standpoint, the debt-for-nature swap, unlike a straight donation, can worsen the budget situation if spending on the domestic environmental bond exceeds the debt-service payments on the external debt that is exchanged in the swap.

When resources are limited, spending on debt-for-nature swaps reduces the resources available to other (even higher priority) projects.

The future of these and similar swaps may be limited by the Brady Plan's current emphasis on debt reduction. A debtor country would clearly prefer to have its debt partially forgiven than to swap it for a domestic liability created through a debt-for-nature swap.

The PRE Working Paper Series disseminates the findings of work under way in the Bank's Policy, Research, and External Affairs Complex. An objective of the series is to get these findings out quickly, even if presentations are less than fully polished. The findings, interpretations, and conclusions in these papers do not necessarily represent official Bank policy.

# Debt-for-Nature Swaps

by  
Michael Occhiolini

## Table of Contents

Introduction	1
History of Debt-for-Nature Swaps	2
The Mechanics of Debt-for-Nature Swaps	3
Debt-for-Nature Transactions	4
Who Benefits?	6
Commercial Banks	6
Environmental Groups	10
The Debtor Country	13
New Initiatives in Debt-for-Nature Swaps	20
Official Debt	20
World Bank and Debt-for-Nature Swaps	22
Conclusion	24
Appendix	26
References	34

## Introduction

Debt-for-nature swaps involve the exchange of a debtor country's external obligation for that country's agreement to use local currency instruments (usually either cash or "environmental bonds") to support a specific environmental project, such as the designation and management of protected areas, the development of conservation management plans, training of park personnel, and environmental education activities.

Although the total amount of debt-for-nature swaps has been limited--\$79 million in face value versus \$1.3 billion of external debt--the agreements have generated a lot of publicity because of the linkage of external debt reduction with environmental protection in developing countries. While debt-for-nature agreements will never substantially reduce developing-country external debt, they can dramatically increase the amount of funds spent by the debtor country on environmental protection.

Debt-for-nature agreements are often described as deals where everyone benefits: the debtor country reduces its external debt, the environmental group can "leverage" its original donation amount, and banks profit either from selling their debt on the secondary market or from the publicity value of donating the debt to the environmental group. This, however, is clearly too simplistic an analysis of debt-for-nature agreements. What is needed is a more thorough understanding of the economic and political effect that these agreements have on each participant. After first reviewing the history and mechanics of debt-for-nature

agreements, this paper examines whether the debtor country and environmental group benefits from the debt-for-nature swap compared to the alternative of a straight donation of funds from the environmental group to the developing country, as well as the incentives that commercial banks have to donate, rather than sell, debt to international environmental groups. Finally, what are the future initiatives in debt-for-nature agreements?

#### History of Debt-for-Nature Swaps

Soon after the onset of the debt crisis in 1982, conservationists began to argue that the large amortization and interest payments made by the highly indebted countries to service their debt were causing irreparable damage to their resource base. According to conservationists, increasing exports to accumulate foreign exchange for debt service put additional pressure on an already fragile resource base, especially since many these countries were already dependent on primary commodity exports for foreign exchange revenue.

Thomas Lovejoy, then vice president of science for the World Wildlife Foundation, wrote an article for the New York Times in 1984 that is deemed as the catalyst for the debt-for-nature concept. Lovejoy advocated that conservation groups should use the debt-equity swap mechanism to raise local currency. In 1987, Conservation International--a international environmental non-profit organization based in the United States--and Bolivia signed the first debt-for-nature agreement. Since then, debt-for-nature agreements have been reached in Costa Rica, Ecuador, and the

Philippines.

### The Mechanics of Debt-for-Nature Swaps

In a typical debt-for-nature swap, an international environmental non-profit group uses donated funds to purchase, through a financial intermediary, the debtor country's external debt on the secondary market at a steep discount from the face value of the obligation (referred to as the "secondary market value"). (On rare occasions, commercial banks will donate the debt instrument to the environmental group directly, thereby saving the group the cost of purchasing the debt on the secondary market.) The international environmental group and the debtor country usually then exchange the debt instrument at a prearranged discount from the face value of the debt (referred to as the "redemption value"), and the country issues a domestic currency instrument that will be used by the local environmental group to fund the agreed upon environmental projects. In addition, the debtor country and the international environmental group will sometimes (for example, Bolivia) reach agreements that stipulate development restrictions on protected areas in the debtor country.

The secondary market value of the debt purchased by the environmental group is always at least equal to or less than the redemption value offered by the debtor country, thereby allowing the international environmental group to "leverage" its original donation and supply the local groups with a larger amount of currency than would be available from a straight donation. The difference between secondary market value and the redemption value

can be considered the implicit subsidy amount paid by the debtor country to the environmental group. It reflects the amount of the secondary market discount not captured by the country, assuming that the secondary market price somewhat reflects the true price of the debt.

#### Debt-for-Nature Transactions

As shown in table 1, the total amount of debt (face value) converted in eight debt-for-nature swaps has reached only \$79 million as of mid-1989. This is significantly less than other transactions in the secondary market for developing-country loans, which reached a level of \$42 billion in 1988 (Debt and International Finance Division Quarterly Review, March 1989). Of the four countries who have debt-for-nature programs (Bolivia, Costa Rica, Ecuador, Philippines), Costa Rica has been the most active, retiring over \$68 million (face value) of debt.

Table 1. Debt-for-Nature Transactions.

Country	Date	Cost <sup>1</sup>	Face Value <sup>2</sup>	Local Currency <sup>3</sup>	Organization <sup>4</sup>
Bolivia	7/87	\$100,000	\$650,000	\$250,000	CI
Ecuador	12/87	\$354,000	\$1,000,000	\$1,000,000	WWF
Costa Rica	2/88	\$891,000	\$5,400,000 <sup>5</sup>	\$4,050,000	NPF
Costa Rica <sup>6</sup>	6/88	\$5,000,000	\$33,000,000	\$11,000,000	Netherlands
Costa Rica	6/88	\$3,500,000	\$24,500,000	\$17,000,000	Sweden
Philippines	1/89	\$200,000	\$390,000	\$390,000	WWF
Costa Rica	1/89	\$784,000	\$5,600,000	\$1,680,000	TNC
Ecuador	4/89	\$1,068,750	\$9,000,000	\$9,000,000	WWF/TNC

**Notes:**

1. \$US expenditure by environmental groups or governments to purchase the debt on the secondary market.

2. \$US face value of the debtor country's external obligations purchased by the environmental groups or governments on the secondary market.

3. \$US equivalent of local currency (either in "environmental" bonds or currency) instruments issued by the debtor government in exchange for its external obligations. For "environmental" bonds, this does not include the interest earned over the life of the bonds.

4. WWF is the World Wildlife Fund; TNC is the Nature Conservancy; NPF is the National Park Foundation of Costa Rica; CI is Conservation International

5. Includes \$250,000 in debt donated by Fleet National Bank of Rhode Island.

6. According to Dutch officials, the 70 percent of the \$33 million (\$23 million) was a straight donation of debt to the Costa Rican government, while the remaining 30 percent (\$10 million) was converted into local currency bonds at full face value.

Source: Nature Conservancy and assorted newspaper reports.

The details of each debt-for-nature swap can be found in appendix 1. Some of the more interesting points of the agreements are as follows:

\* The first debt-for-nature agreement (Bolivia) was the only one in which land was set aside, and development restrictions adopted, as a result of the agreement. This deal was extremely controversial at first, as many Bolivians thought that the country had relinquished sovereignty to the international environmental group. There is, however, no transfer of land ownership, and development decisions are not based on agreements between the local environmental groups, the government, and the regional population. The Bolivian government has been slow in dispersing the local currency funds, and controversies have arisen over the development use of the buffer areas.

\* Costa Rica has had the most extensive debt-for-nature program, and was the first country to involve creditor governments (Swedish and the Dutch) in debt-for-nature programs. [Note: Sweden and the Dutch government did not use their own official debt in the

transaction; they purchased commercial bank debt on the secondary market.) After seeing the secondary market price of their debt fall over the last few years, the Costa Rican government has lowered their redemption rate from 70 to 30 percent of face value, thus reducing the implicit subsidy amount paid to the international environmental groups.

\* In its two debt-for-nature agreements, Ecuador has redeemed their debt at full face value, granting the largest possible subsidy. Ecuador, however, has offset this large implicit subsidy in part by redeeming its debt at an exchange rate considerably less than market rate, and issuing domestic "environmental" bonds that have (ex post) interest rates lower than the inflation rate.

#### Who Benefits?

Debt-for-nature swaps are often described as deals "where everyone benefits." This is not necessarily true. This section examines the costs and benefits of debt-for-nature swaps for the three major participants: commercial banks, international environmental groups, and the debtor countries.

#### Commercial Banks

So far, commercial banks involvement in debt-for-nature swaps have been mainly limited to selling sovereign debt to international conservation groups, or acting as their financial intermediaries. Thus, the banks' role in debt-for-nature swaps have been similar to their role in debt-for-equity swaps; they are willing to supply debt at the secondary market price to any buyer.

Banks have, however, reduced their commission on some of the

debt-for-nature swaps. Environmental groups have also been trying to convince banks to donate their debt, thus saving them the cost of purchasing the debt on the secondary market. Despite some recent regulatory changes (such as IRS ruling 87-124, which allows banks to deduct the full face value of the contribution, not just its market value), commercial banks still have little incentive to donate their debt. Currently, only Fleet National Bank of Rhode Island has donated debt for a debt-for-nature swap (\$250,000 in the first Costa Rican swap). Even in this case, the bank decided to write-down the debt, thereby receiving a tax deduction on the full amount, rather than risk the financial and regulatory implications of a straight donation of debt.

Donating debt. The key to any significant expansion of debt-for-nature swaps lies in the financial and regulatory incentives for banks to donate their debt. In hope of giving banks incentive to donate their debt, the IRS issued regulation 87-124 in 1988. Before this regulation, a bank donating debt to a non-profit group could only take a tax deduction on the "fair" market value of the donation. Facing Congressional action on this issue, in 1988 the IRS established regulation 87-124. This regulation allows banks, when donating debt, to recognize a loss equal to the difference between the face value of the debt and the fair market value of the debt, and take a charitable deduction equal to the fair market value of the debt. Thus under this ruling, the banks can deduct the full face value of the debt upon donation--not just its fair market value.

It was hoped that this regulation would increase banks' willingness to donate debt for debt-for-nature swaps. But much of the incentive to donate debt is reduced if the difference between the face value of the debt and the fair market value of the debt (the conversion discount) must be treated as a loss and charged against the developing-country loan loss reserve for regulatory purposes. Currently, debt used in debt-for-equity swaps is treated in this manner, and the Securities and Exchange Commission may treat donated debt the same way. Banks are particularly reluctant to record a loss against their developing-country loan-loss reserves as evidenced by money-center banks' unwillingness to trade much of their own debt on the secondary market.

Further obfuscating an already complex tax and regulatory environment is a recent IRS ruling that restricts banks from deducting foreign loan losses from their domestic income. Previously, banks have deducted foreign loan losses from domestic income, thereby protecting their level of foreign loan income. Now, however, foreign loan losses must be apportioned between foreign and domestic income based on the bank's ratio of foreign to total loans. The level of foreign loan income is important because the IRS allows banks to reduce their U.S. taxes dollar-for-dollar by the amount of foreign tax credits (taxes paid to foreign governments). A reduction in the foreign income reduces the amount of foreign tax credits available to the bank. Although this clearly has an impact far beyond the treatment of charitable debt, this ruling could limit bank's incentive to donate debt under 87-

124.

Donate, write-down, or sell? Banks essentially have four options in handling their debt: hold, donate, write-down, or sell. Environmental groups, in seeking debt for donations, are essentially competing against the last two options. All of these options are subject to complex tax and regulatory implications. Both donating the debt and writing off the debt allow the banks to take a tax deduction for the full face value of the debt (that is, the tax rate  $\times$  face value of the debt). But selling the debt at the secondary market price, and getting a tax deduction for the loss (on the conversion discount), will always yield the bank more, as shown by the following equation.

$$p + (1-p)t > t \quad \text{when } p, t > 0$$

where:

$p$  = secondary market price of the debt, and

$t$  = marginal tax rate.

Benefits and costs to banks. Environmental groups argue that banks receive two major benefits from debt-for-nature swaps; banks can both dispose of their risky debt, and improve their relationships with highly-indebted developing countries. Swaps are also good for the bank's reputation, especially with the increasing importance of environmental issues in developed countries. Environmental groups also argue that developing countries, by increasing their future economic potential through sustainable development policies, can also become better clients for the banks in the long run.

As long as banks are selling--and not donating--debt they

experience the same costs that are normally present in any secondary market transaction. However, donating debt may result in certain costs. As shown earlier, it is more profitable, from the bank perspective, to sell the debt on the secondary market than to donate the debt. If the bank is carrying the debt at 100 percent of face value, donating the debt for tax purposes could contaminate the bank's portfolio, forcing it to increase its provisions against similar type loans. Finally, donating debt for debt-for-nature swaps may put additional pressure on banks to forgive other country obligations, and would therefore be unpopular with the bank's shareholders.

#### Environmental Groups

International environmental groups clearly benefit from debt-for-nature swaps. By receiving more in local currency from the debt swap than they pay for the debt instrument, they can "leverage" the original donation and supply local environmental groups with additional funds. Unless the debtor country redeems the debt at the same discount that the environmental group purchased the instrument, the swap will result in more money than in a straight donation. The debt-for-nature "concept" has also increased the profile of environmental groups, as well as their ability to raise funds for environmental protection.

Finally, prior to the debt-for-nature concept, environmental groups had little or no direct contact with either commercial banks or debt countries' finance ministers. Debt-for-nature swaps, however, have entailed intense negotiations between all three

groups, leading to a network of relationships that may prove valuable to international environmental groups beyond simply debt-for-nature agreements.

There are some costs in participating in debt-for-nature agreements for international environmental groups. One of the largest costs to the environmental groups is the amount of time and staff resources it takes to finalize a debt-for-nature agreement. There are many complex steps involved in an agreement, from conceiving of the idea, meeting with the country, organizing donors, finding a financial intermediary, purchasing the debt, finalizing the swap arrangement, and overseeing the implementation. Problems also arise in determining which, and how much, local environmental groups should receive of the local currency funds. As in a straight donation of funds, questions also arise regarding the ultimate influence the donor (the international environmental group) has on the expenditure of the funds. Finally, in the United States, the IRS holds the non-profit group responsible for the expenditure of donated funds.

The environmental groups face a decision: would they get benefit more from a straight donation or a debt-for-nature swap. At first glance, the answer may seem straightforward--a debt-for-nature swap. But, this may not necessarily be true. The break even point for the environmental groups is when the "leveraged" amount received from the swap is equal to the marginal cost of that particular debt-for-nature agreement. The closer the debtor country comes to capturing all of the discount on the secondary

market (such as in Costa Rica), the lower is the leveraged amount from the debt-for-nature swap, and the higher probability that the costs of arranging the swap will outweigh the benefits of increased local currency.

Second, some countries exchange the debt at the official exchange rate, often for considerably less local currency units than the parallel market exchange rate (for example, for each dollar converted the environmental group could get 5 units of local currency instead of 8 units). Thus, the implicit subsidy in the debt-for-nature swap may be offset by the difference in the parallel and official exchanges rates.

Third, in addition to the local currency funds that the environmental group receives from the swap, some (for example Bolivia) of the debt agreements have put development limitations on the designated protected areas. The benefit of these restrictions to the international environmental group, and whether these restrictions would have occurred outside of the debt-for-nature framework, is difficult to determine and hard to incorporate in a simple cost analysis.

Fourth, as cited earlier, a debt-for-nature agreement may be more costly than a straight donation to the debtor country because of the number of steps involved in finalizing the agreement.

Finally, the subsidy implicit in the debt-for-nature swap, that is the difference between the redemption and secondary market value of the debt, may be offset to a degree by the differential between the interest yield on a domestic "environmental bond" and

a comparable dollar dominated instrument that could be purchased through donated funds. In some of these countries (such as Costa Rica and Ecuador), the environmental bonds issued as a result of the debt-for-nature swap have yielded nominal interest rates lower than the inflation rate. [In Costa Rica, the bonds have yielded interest rates of 15 percent with an inflation of 25 percent, and in Ecuador interest on the bonds were 35 percent with inflation rates of 86 percent, despite the bonds being "tied" to market rates (December to December 1987-88).]

The bonds are generally nontransferable, with a fixed interest rate over at least a four year time horizon; high inflation and a depreciating domestic currency could make a dollar-denominated instrument more attractive. In addition, delays by the debtor country in releasing the funds (such as in the Bolivia swap) results in opportunity costs for the international environmental group, which could have been earning interest on a dollar-denominated instrument in the interim period.

#### The Debtor Country

The costs and benefits of debt-for-nature swaps to the debtor country are complex. There is an extensive literature on whether it makes sense for debtor countries to participate in buybacks and debt-for-equity swaps, and many of these insights directly apply to debt-for-nature agreements.

Balance of payments. First, it helps to contrast debt-for-nature swaps with its more common relative--debt-for-equity swaps (it is common to hear debt-for-nature swaps referred to as the "son" of

debt-for-equity swaps). These two types of swaps have different effects on the country's external accounts. In a debt-for-equity swap, the stock of external liabilities is reduced by the discount captured by the debtor country. From a balance-of-payments perspective, a debt-for-equity swap involves: (1) a loan repayment (outflow) in the capital account equal to the redemption (market) value of the debt, and (2) foreign direct investment (inflow) equal to the value of the newly created equity instrument. From a long-term investment income flow perspective, a reduction of the country's debt service payments through the retirement of the external obligation is offset (to a degree) by an increase in profit remittances from the direct foreign investment. [Note, however, that debt-for-equity swaps typically prohibit profit remittances during the first five or ten years.]

The effect of a debt-for-nature swap on the external account is slightly different than in a debt-for-equity swap. In a debt-for-nature swap, the stock of external liabilities is reduced by the whole face value of the debt, since there is no concomitant creation of an equity instrument. From a balance-of-payments perspective, a debt-for-nature swap involves (1) a loan repayment (outflow) in the capital account equal to the redemption (market) value of the debt, and (2) an unrequited transfer (inflow, current account) equal to the value of the newly created instrument. From a long-term investment-income flow perspective, there is no outflow of profit remittances to offset the reduction in debt service payments as in a debt-for-equity agreement.

Economic impact of swaps. Debt-for-nature consists essentially of two steps: a buyback of debt, and an issuance of a local currency instrument. Much of the criticism of debt buybacks apply equally to debt-for-nature agreements. Bulow and Rogoff (1988) argue that, from a debtor country perspective, buybacks are a mistake for two reasons: (1) when countries purchase debt at the market price, they are paying "average" debt prices to retire "marginal" debt; and (2) that the collateral used by sovereign debtors (unlike domestic debt where all collateral is seized upon default) can never be fully seized by the creditor government. Therefore, there is less reason for the debtor country (compared to the domestic borrower) to buyback debt, as the debtor country has less to lose in the case of default. Using this standard, debt-for-nature swaps are even worse than straight buybacks, since the debtor country does not even capture the full secondary market discount on its debt.

Other economists argue that the subsidization inherent in debt-for-equity swaps makes sense only as long as the direct foreign investment would not otherwise have occurred. It is possible that this logic could be extended to debt-for-nature swaps; that is, that the subsidization inherent in debt-for-nature swaps would make sense only if the donation would not otherwise have occurred.

Donation versus swap. Is a country better off receiving a straight donation or participating in a debt-for-nature swap? If we assume that the donation would occur even without the debt-for-nature program (probably a generous assumption), the debtor country is

clearly better off receiving a straight donation.

In a straight donation of funds, the debtor country has only a limited role in the transaction (and only when the country has a fixed exchanged rate). Looking at the external balance, the country receives an inflow of foreign exchange. The effect of a donation on the Central Bank account balance is shown in table 2. In a floating exchange regime, the conversion of foreign exchange into domestic currency occurs in the financial markets, and the exchange rate adjusts. There is no effect on the Central Bank account balance.

Table 2. Central Bank Accounts

Straight Donation		Debt-for-Nature	
-----		-----	
Assets	Liabilities	Assets	Liabilities
(1) F. Exchange +	(1) Currency +	(3) Currency	+
	(2) Currency -	(3) External Debt	-
	(2) Bonds +	(4) External Debt	-
		(4) Bonds	+

Many of these countries, however, have a fixed exchange rate regime. In a fixed exchange rate regime, the Central Bank would experience an increase in its foreign exchange assets and domestic currency liabilities (transaction 1). The bank may or may not want to sterilize the monetary impact of the exchange. If the Central Bank does not sterilize, the increase in domestic currency in a donation will be usually be less than the increase in local currency in a debt-for-nature swap, because there is no implicit subsidization by the debtor country in the straight donation case. [Note, however, that in most debt-for-nature swaps the debtor country issues environmental bonds and not an equivalent amount of

local currency.]

If the Central Bank does decide to sterilize the monetary effect of the foreign exchange inflow (transaction 2), and issues bonds at competitive market rates, the country could face higher expenditures than in issuing environmental bonds from a debt-for-nature swap. In many cases (Costa Rica, Ecuador) the nominal interest rate on the nontransferable "environmental" bonds have been lower than the rate of inflation, resulting (ex post) in negative real interest rates.

In a debt-for-nature-swap, however, the country receives no foreign exchange inflow. Instead, it is given the opportunity to retire part of its external debt, on which it may or may not be making current payments. If the country is making any payments on the debt, it is likely to be only interest--not principal--payments since the debt is trading at less than face value on the secondary market.

As table 2 shows, in a debt-for-nature swap the Central Bank either exchanges the external debt (after marking it to market value) for domestic currency (transaction 3), or issues a domestic bond at the agreed upon terms (transaction 4). Transactions 3 and 4--unlike transaction 1--involve an exchange of one external type of liability for a domestic liability. But in many of the highly indebted countries, it is the internal balance that is the most binding; the debt-for-nature swap, unlike a straight donation, can clearly worsen the fiscal situation if the expenditures on the domestic bonds exceed the payments on the external debt that is

exchanged in the swap.

Benefits to the debtor country. Debt-for-nature swaps are said to benefit the debtor country because it reduces their external debt. As has been argued by numerous economists, reducing the debt overhang may result in efficiency gains for the country. According to this argument, because of the "overhang" of debt, investments that are often efficient from an economic perspective--that is, in which the marginal product of capital is greater than the cost (interest rate) of external borrowing (LIBOR plus some risk premium)--are not undertaken because the return from the investment will be extracted by the creditor for debt service payments. In this situation, reducing the level of debt is beneficial to the country. In addition, unlike a debt-for-equity swap, the debt-for-nature expenditures benefit the debtor country's residents.

Costs to the debtor country. The implicit subsidization of the debt-for-nature swaps, the inflationary impact, and the sovereignty issue are often described as costs to debtor countries. Debtor countries have scarce resources, and expenditures on debt-for-nature swaps may reduce the amount of resources available for other expenditures. To the extent that debt-for-nature expenditures simply replace normal budget expenditures for environmental protection, there is no implicit tradeoff or cost to the government. However, this is not normally the case, as debt-for-nature swaps increase government expenditures on environmental protection over previous levels, potentially reducing expenditures for other--as equally important--programs.

Debt-for-nature swaps appear to have minimal inflationary impact. Most of the debt-for-nature swaps have involved the issuance of environmental bonds and not a lump-sum disbursement of local currency. As shown in table 2, issuing of environmental bonds (transaction 4) has no immediate effect on domestic currency; it involves the exchange of an external debt instrument for an internal debt instrument. If the expenditures on the debt-for-nature swap simply replaces normal budgetary expenditures on the environment, it is not inflationary. [That is, if the debt-for-nature domestic bond was simply a replacement for a domestic bond that would have been issued anyway to cover similar environmental expenditures; otherwise, the issuance of a new bond will eventually lead to additional expenditures.] In addition, the bonds are not inflationary to the extent that their payments are less than or equal to the equivalent payments made on the external debt instrument.

Perhaps the most controversial aspect of debt-for-nature swaps is the possibility that the swaps may result in the debtor country relinquishing aspects of its sovereignty to the international environmental group. But there has never been a single debt-for-nature swap that resulted in a transfer of land ownership from a debtor country to an international environmental group. In fact, only in the Bolivia swap was additional land (the "buffer" areas) set aside and development restrictions adopted to protect these areas. The rest of the swaps have resulted only in local currency instruments designed to fund local environmental groups, and not

in creating newly protected areas with specific development limitations.

### New Initiatives in Debt-for-Nature Swaps

#### Official Debt

So far, debt-for-nature swaps have involved only commercial bank debt traded on the secondary market. Unable to get banks to donate debt for debt-for-nature swaps, environmental groups are trying to increase the available pool of debt for debt-for-nature swaps by convincing official creditors to allow their debt to be used in debt-for-nature swaps. Such environmental groups as Nature Conservancy and World Wildlife Fund have been lobbying the U.S. government (both Congress and the Executive Branch) to donate official debt for debt-for-nature or debt-for-development swaps. In the United States, one of the major obstacles in getting the government to donate its debt to the environmental groups is the budgetary impact of the donation. It is still not clear how the donation (or forgiveness) would be scored against the budget; that is, whether a loss of revenue for the government would occur, and if so, how large.

Much of the interest in using official debt for debt-for-development swaps first began as a result of the 1988 Toronto Economic Summit, in which the G-7 countries established guidelines that allowed Paris Club Creditors to forgive debt to the poorest of the Sub-Saharan countries. One of three options given to Paris Club creditors was to forgive up to one-third of the debt of the developing country (with the other two being extended maturities

and lower interest rates). France has generally chosen the first option, while the United States (until July 1989) has been reluctant to forgive debt.

Creditor governments' willingness to forgive debt for low-income African countries may open the door to donating debt to environmental groups for debt-for-nature swaps. However, debtor countries are clearly better off having their debt forgiven by creditor governments than buying back their debt through debt-for-nature agreements. Thus, there would be little incentive for debtor countries to participate in debt-for-nature agreements that used official debt if a large amount of their official debt was being forgiven through other channels.

Instead of donating official debt to the international environmental group for debt-for-nature swaps, creditor governments could themselves explicitly link debt forgiveness to a range of policy reforms--such as environmental protection--in debtor countries. If the debtor country compares such an arrangement to a debt-for-nature swap done through an international environmental group, the benefits of not having to issue a local currency instrument (necessary in a debt-for-nature swap) would have to weighed against the costs of agreeing to the creditor country's conditionality.

However, debtor countries (especially Brazil) have been sensitive to international criticism of their environmental policies in the past, and such a direct linkage of debt forgiveness to environmental policy reforms by creditor countries would be

extremely controversial. Brazil and other countries are already wary of the sovereignty implications of debt-for-nature agreements; a plan linking debt forgiveness to environmental policy reforms could be viewed as an even greater threat to national sovereignty, and invoke charges of neo-colonialist behavior by creditor countries. However, there is seemingly little chance that any of Brazil's official debt will be forgiven.

#### World Bank and Debt-for-Nature Swaps

There have been a variety of proposals by international environmental groups, the U.S. Congress, and the U.S. Treasury to increase World Bank involvement in debt-for-nature swaps.

Using multilateral debt for debt-for-nature swaps. As with official debt, international environmental groups have been interested in using multilateral debt for debt-for-nature swaps. World Bank debt has never been rescheduled or sold in secondary markets, and Bank officials have repeatedly stated that they are prohibited by charter to use Bank debt for debt-for-nature swaps. But Congressman John Porter, in testimony before the International Development Institutions Subcommittee of the House Banking Committee on May 24, 1989, argued that the World Bank has some flexibility in refinancing or restructuring debt under Article I, Section 4(C) of the bank's Articles of Agreement (Cody, 1988). According to Porter, the World Bank's choice not to reschedule or refinance can be considered more of a policy decision designed to protect the bank's AAA bond rating.

World Bank as a clearing-house for debt-for-nature swaps. In

April 1988, the U.S. Treasury submitted a report to Congress on possible initiatives that could be undertaken by multilateral development banks--specifically the World Bank--to encourage debt-for-nature swaps (U.S. Department of Treasury, 1988). The report recommended a host of measures that the World Bank could adopt to facilitate debt-for-nature agreements. They are as follows:

- \* Debt-for-nature swaps could be "piggybacked" on World Bank and other multilateral development banks' environmental loans.

- \* The World Bank serves as a clearinghouse for debt-for-nature swaps, identifying banks interested in donating (or selling) debt, and acting as a source of information for both environmental groups and debtor countries interested in debt-for-nature swaps.

- \* Establishing a World Bank pilot program for countries that have, or are interested in implementing, a debt-for-nature program. The World Bank could offer technical assistance in the design of the debt-for-nature program.

Enforceability of debt-for-nature agreements. Finally, there has been some discussion in the U.S. Congress about using the World Bank as a means to ensure that debtor countries actually implement the agreed upon covenants arising from the debt-for-nature agreement (House of Representatives Report 100-994, 1988). In general-obligation finance, the cross-default clause assures lenders the same sanction rights in case of a default. In debt-for-equity and debt-for-nature swaps, the owner of the obligation would have to rely on the domestic legal system of the borrower country to enforce its claim. To increase the costs (and thus the

likelihood of compliance) for debtor countries that fail to comply with the terms of their debt-for-nature agreement, some international environmental groups would like to make disbursement of new World Bank environmental loans conditional on debtor country's compliance with debt-for-nature covenants.

#### Conclusion

Of the three participants in debt-for-nature swaps, the international environmental group benefits the most from the swap, as it leverages its original donation amount by the difference between the secondary market value and the redemption value of the debt. As the difference between the redemption and secondary market value declines over time, the costs of the debt-for-nature swap for the environmental group (such as the complexity of the deals, the low real returns on the domestic instrument, and the differences between official and parallel exchange rates) is more likely to offset the "leveraged" amount gained through the debt-for-nature mechanism.

Unless there is further change to the tax and regulatory environment, there is little reason--other than positive publicity--for commercial banks to donate their debt to the international environmental group. Under the current system, commercial banks can always realize more by selling their debt on the secondary market.

The debtor country subsidizes the swap by the difference between the redemption value and secondary market value of the debt. In the economic literature, there is still considerable

controversy over whether the debtor country benefits from buying back its debt at the secondary market price--let alone at the higher redemption rate usually offered in debt-for-nature swaps. From a fiscal standpoint, the debt-for-nature swap, unlike a straight donation, can clearly worsen the budgetary situation if the expenditures on the domestic environmental bond exceeds the debt-service payments on the external debt that is exchanged in the swap.

Highly indebted countries must make difficult fiscal choices, usually facing strict constraints of IMF and World Bank fiscal and monetary targets. In a situation of limited financial resources, expenditures on debt-for-nature swaps reduces the resources available to other projects. To the extent that the swap is seen as a costless transaction, and not explicitly accounted for in a country's budget, expenditures on debt-for-nature swaps may reduce resources for even higher priority projects.

Although debt-for-nature (and development) swaps will never significantly reduce the external debt of developing countries, they can sharply increase the funds available to specific projects in the debtor country. If the debtor countries and donors' expenditure priorities are the same, these swaps can be beneficial to the debtor country.

Finally, the future of debt-for-nature and similar swaps may be limited by the Brady Plan's current emphasis on debt reduction. Debt reduction by commercial banks, forgiveness of official debt by creditor countries, and the clear prohibition of using

multilateral debt for debt-for-nature swaps reduces both the available supply of debt and much of incentives for debtor countries to participate in debt-for-nature arrangements. A debtor country would clearly prefer to have its debt forgiven than to swap it for a domestic liability created as a result of the debt-for-nature swap.

## Appendix 1

### Bolivia

In July 1987, Conservation International, using a \$100,000 grant from the Frank Weeden foundation, purchased \$650,000 of Bolivia's commercial bank debt at roughly 15 cents on the dollar (a discount of 85 percent). In exchange for Conservation International's cancellation of the debt, Bolivia agreed to set aside 3.7 million acres in three conservation areas surrounding the Beni Biosphere in the Amazon basin. In addition, Bolivia agreed to contribute \$100,000 in pesos to a \$250,000 peso fund established to manage the Beni Reserve area, with the remaining \$150,000 being contributed by the U.S. Agency for International Development (AID). The \$250,000 fund is to be administered through the Ministry of Agriculture and a local environmental group to be selected by Conservation International.

The Beni Biosphere area consists of forests and grasslands that support over 13 endangered plant and animal species, 500 species of birds, and is home to the nomadic Chimane Indians. The agreement calls for the newly designated areas, all owned by the government, to serve as a buffer zone to the Biosphere area, allowing sustainable development (such as limited logging and farming) in the buffer areas. The 3.7 million acres includes the 2.9 million Chimane forest reserve, as well as the Yacuma Regional Park and the Corbedeni Hydrological basin (800,000 acres). The \$250,000 peso environmental fund will be used to support various programs in the Biosphere and buffer areas. The National Academy of Sciences, a Bolivian NGO, is helping to develop the conservation plans for the buffer areas. The Academy also oversees a commission

of local officials and 10 non-governmental institutions, such as the Institute of Ecology and the Environmental League (LIDEMA), that are involved in the development of the areas.

There have, however, been delays and problems in the implementation of the agreement. The Bolivian government only as recently as April 1989 made its \$100,000 peso contribution to the environmental fund, while a dispute has developed over the use of the "permanent production forest" in the Chimane forest reserve. This area is home to a number of indigenous population groups, one of which includes the Chimane Indians. When the logging concessions were granted by the Bolivian government earlier in the year, the Chimane Indians (far less organized than the other indigenous groups) were not represented. After a series of protests by the Chimane Indians, the Bolivian government suspended the logging concessions pending a governmental review that is to be completed in the next few months.

The amount of the implicit subsidy in the Bolivian swap is not simply the difference between the redemption value and the secondary market value, for the economic value of the "development" rights to the \$3.7 million acre buffer area is difficult to estimate. An analysis of the net present value of the various possible development alternatives for the \$3.7 billion acres under the debt-for-nature agreement is outside the scope of this project. Looking simply at the amount paid by Conservation International (\$100,000 for \$650,000 of Debt) and the amount paid by the Bolivian government (\$100,000 for \$650,000) for the debt, there is no

subsidy, as the Bolivian government captures the full secondary market discount.

#### Costa Rica

Costa Rica's debt-for-nature program is the largest of the current programs. According to Dr. Alvaro Umana Queseda, Costa Rica's Minister of Natural Resources, Energy and Mines, Costa Rica has swapped over \$75 million (face value) of debt for \$36 million in local currency bonds--a discount of roughly 48 percent. The \$75 million figure includes, however, a \$10 million debt-equity swap involving a local door-manufacturing industry, which is generally considered as a private debt-for-equity swap. This is included in the \$75 million figure because harvesting restrictions were placed on the 5,000 hectares of forest purchased by the manufacturing company from the proceeds of the swap. In addition, Dr. Queseda reports that the Netherlands and Costa Rica agreed to a \$33 million (face value) debt-for-nature swap. However, according to Nature Conservancy and Dutch officials, 70 percent of the \$33 million was actually a straight donation of debt to the Costa Rica Central Bank, leaving only \$10 million (30 percent) in face value actually converted under a debt-for-nature swap. These classification differences could result in a more conservative \$45 million figure for Costa Rica's debt-for-nature program.

#### The Original \$5.4 Million Conversion.

In 1987, the Costa Rica's Central Bank, at Dr. Queseda's suggestion, established a debt-for-nature program with an initial ceiling of \$5.4 million. This \$5.4 million figure was surpassed

by early 1988. Funds to purchase the debt came from a variety of sources (World Wildlife Foundation, Nature Conservancy, and others), and \$891,000 of donated funds were used by the National Park Foundation of Costa Rica to purchase \$5.15 million of debt-- at 17 cents on the dollar (a discount of 83.5 percent). The remaining \$250,000 of debt was donated by Fleet National Bank of Rhode Island.

The Costa Rica government exchanged its debt at 75 percent of face value, offering \$4.05 million in local currency (colones) "environmental bonds," that have a 6 year maturity and an average interest rate of 25 percent. The bonds are nontransferable, offer no principal in the first year, and can be used as collateral for additional loans. The implicit subsidy amounts to \$3.1 million for the Costa Rican government. Proceeds of the bonds are to be used for the management of Costa Rica's park system. Seeing the secondary market price of its commercial bank debt drop from 30 cents to the low teens, Costa Rica changed its exchange guarantee from 75 percent to 30 percent of face value after the initial \$5.4 million program. By reducing its redemption value, Costa Rica captures more of the discount on the secondary market, and limits the implicit subsidy of the swap.

#### The \$33 Million Netherlands Debt-for-Nature Swap.

According to Dr Queseda, in June 1988 the Dutch Government committed 10 million guilders (\$5 million) to purchase Costa Rican commercial bank on the secondary market through a designated financial intermediary. The Dutch government purchased almost \$33

million (face value) of debt, at a secondary market price of 15 cents on the dollar (a discount of 85 percent). The rest of the terms of the agreement are unclear. According to Dr. Queseda, Costa Rica converted the \$33 million at 33 percent of face value (67 percent discount), issuing \$11 million worth of colone environmental bonds with an interest rate of 15 percent and 4 year maturity. According to Nature Conservancy and Dutch officials, 70 percent of the \$33 million was donated to Costa Rican government (23 million), while the remaining 30 percent (10 million) was converted into local currency bonds at full face value (\$10 million of colone bonds). The bonds are to fund reforestation and support local cooperative institutions concerned about the environment. Although the differences in the terms of the agreement result in roughly the same amount of local currency bonds, they result in a different swap figure--\$33 million versus \$23 million--and implicit subsidy level--of 18 percent versus 85 percent.

The \$24.5 Million Swedish Debt-for-Nature Swap.

Around the same time as the Netherlands agreement, Swedish private conservation groups and student groups, lead by Daniel Janzen, raised over \$15 million to support environmental protection of Costa Rica's Guanacaste National Park. \$3.5 million of that total was used to purchase \$24.5 million (face value) of Costa Rican debt at a price of 14 cents on the dollar (a discount of 86 percent). Costa Rica has agreed to exchange the debt at 70 percent of face value (30 percent discount), issuing \$17 million worth of colone environmental bonds at 15 percent interest and 4 year

maturity. Since it was Sweden's first bilateral aid contribution, and the project was developed during the terms of the original \$5.4 million swap facility, Costa Rica offered to exchange the debt at 70 percent of face value, instead of the new official exchange guarantee of 30 percent of face value. Exchanging the debt at 70 percent face value, instead of 30 percent of face value, increases the implicit subsidy by roughly \$10 million (\$14 million versus \$4 million).

The \$5.7 Million Nature Conservancy Debt-for-Nature Swap.

In early 1989, the Nature Conservancy, using \$784,000 in donated funds and American Express as its financial intermediary, purchased \$5.6 million of Costa Rica debt at a secondary market price of 14 cents on the dollar (a discount of 84 percent). Costa Rica exchanged the debt at 30 percent of face value (70 percent discount), issuing \$1.7 million of Costa Rican currency bonds. The bonds will yield an average interest rate of 25 percent over 5 years.

Ecuador

Ecuador has had two debt-for-nature agreements. In the first December 1987 agreement, the World Wildlife Foundation, using 354,000 in donated funds, purchased \$1 million (face value) of Ecuador's commercial bank debt at a price of 35 cents on the dollar (a discount of 65 percent). Ecuador exchanged the debt at face value, issuing \$1 million of Ecuadorian currency bonds at the official exchange rate. (The official exchange rate is considerably less than the floating rate.) The bonds have a nine

year maturity, and are linked to market interest rates. Proceeds from the bonds are to be used for park infrastructure improvements, environmental management plans, park personnel training, and educational activities.

Ecuador's second debt-for-nature swap was completed in April 1989. In this swap, the Nature Conservancy, the World Wildlife Foundation, and the Missouri Botanical Gardens used \$1.068 million in donated funds to purchase \$9 million (face value) of Ecuador's debt at a cost of roughly 12 cents on the dollar (88 percent discount). Ecuador redeemed the debt at 100 percent of face value, with the proceeds from the \$9 million worth of local currency bonds going to Fundacion Natura, Ecuador's leading conservation group. Fundacion Natura will use the money to protect Amazonian national parks and reserves.

#### Philippines

In an agreement reached in June 1988, the World Wildlife Foundation purchased \$390,000 (face value) of Philippine debt at a price of 55 cents on the dollar (a 45 percent discount), using \$200,000 in donated funds. The Philippine government redeemed the debt at 100 percent of face value, creating an account containing \$390,000 worth of local currency. The account will be managed by the Haribon Foundation. Proceeds from the funds will be used for the protection of two parks on Palawan Island, and the development of management plans and infrastructure for other national parks.

## References

- Bulow, Jeremy and Kenneth Rogoff. 1988. "The Buyback Boondoggle." Brookings Papers on Economic Activity 2.
- Cody, Betsy. 1988. "Debt-for-Nature Swaps in Developing Countries: An Overview of Recent Conservation Efforts." CRS Report to Congress. Congressional Research Service, Environment and Natural Resources Policy Division. Washington, D.C.
- Lovejoy, Thomas E. 3d. 1984. "Aid Debtor Nations' Ecology." The New York Times. October 4: A31.
- Umana, Alvaro. 1987. "Costa Rica Swaps Debt for Trees." Wall Street Journal. March 6.
- Umana, Alvaro. 1989. "Debt Relief for Energy Efficiency, Conservation and Sustainability." Paper presented at World Bank in Washington, D.C. May.
- U.S. Congress. House. Participation by the United States in a Capital Stock Increase of the International Bank For Reconstruction and Development and a Replenishment of the African Development Fund, and for Other Purposes: Report to Accompany H.R. 4645. 100th Cong., 2nd sess., 1988.
- United States Department of Treasury. 1988. "U.S. Department of Treasury Report to Congress on Debt-for-Nature Swaps." April 15.

PRE Working Paper Series

<u>Title</u>	<u>Author</u>	<u>Date</u>	<u>Contact for paper</u>
WPS373 Are Better-off Households More Unequal or Less Unequal?	Lawrence Haddad Ravi Kanbur	March 1990	J. Sweeney 31021
WPS374 Two Sources of Bias in Standard Partial Equilibrium Trade Models	Samuel Laird Alexander J. Yeats	February 1990	J. Epps 33710
WPS375 Regional Disparities, Targeting, and Poverty in India	Gaurav Datt Martin Ravallion	March 1990	C. Spooner 30464
WPS376 The World Economy in the Mid-1990s: Alternative Patterns of Trade and Growth	Colin I. Bradford, Jr.	March 1990	C. Evangelista 32645
WPS377 Security for Development in a Post-Bipolar World	John Stremiau		
WPS378 How Does the Debt Crisis Affect Investment and Growth? A Neoclassical Growth Model Applied to Mexico	Patricio Arrau	March 1990	S. King-Watson 31047
WPS379 Some Implications of Policy Games for High Inflation Economies	Miguel A. Kiguel Nissan Liviatan	March 1990	R. Luz 39059
WPS380 Techniques for Railway Restructuring	Lee W. Huff Louis S. Thompson	March 1990	S. Shive 33761
WPS381 Trade in Banking Services: Issues for Multilateral Negotiations	Alan Gelb Silvia Sagari	March 1990	W. Pitayatonakarn 37666
WPS382 The Indonesian Vegetable Oils Sector: Modeling the Impact of Policy Changes	Donald F. Larson	March 1990	D. Gustafson 33714
WPS383 On the Relevance of World Agricultural Prices	Yair Mundlak Donald F. Larson	March 1990	D. Gustafson 33714
WPS384 A Review of the Use of the Rational Expectations: Hypothesis in Models of Primary Commodity Prices	Christopher L. Gilbert		
WPS385 The Principles of Targeting	Timothy Besley Ravi Kanbur	March 1990	J. Sweeney 31021
WPS386 Argentina's Labor Markets in an Era of Adjustment	Luis A. Riveros Carlos E. Sanchez	March 1990	R. Luz 39059
WPS387 Productivity and Externalities: Models of Export-Led Growth	Jaime de Melo Sherman Robinson	March 1990	M. Ameal 37947

PRE Working Paper Series

	<u>Title</u>	<u>Author</u>	<u>Date</u>	<u>Contact for paper</u>
WPS388	The Distortionary Effects of Tariff Exemptions in Argentina	Faezeh Foroutan	March 1990	S. Fallon 38009
WPS389	Monetary Cooperation in the CFA Zone	Patrick Honohan		
WPS390	Price and Monetary Convergence in Currency Unions: The Franc and Rand Zones	Patrick Honohan		
WPS391	An Accounting Framework to Assess Wealth Effects of Voluntary Debt Reduction: Some Applications to Latin America	Daniel Oks		
WPS392	Institutional Development at the Sectoral Level: A Cross Sectoral Review of World Bank Projects	Samuel Paul		
WPS393	Debt-for-Nature Swaps	Michael Occhiolini	March 1990	S. King-Watson 31047
WPS394	Threshold Effects in International Lending	Mark M. Spiegel		
WPS395	The Rope and the Box: Gambian Saving Strategies and What They Imply for International Aid in the Sahel	Parker Shipton		
WPS396	Strategic Trade Policy: How New? How Sensible?	Max Corden		
WPS397	Antidumping Regulations or Procartel Law? The EC Chemical Cases	Patrick A. Messerlin		
WPS398	Agricultural Extension for Women Farmers in Africa	Katrine A. Saito C. Jean Weidemann		
WPS399	Macroeconomic Adjustment, Stabilization, and Growth in Reforming Socialist Economies: Analytical and Policy Issues	Andrés Solimano		
WPS400	Macroeconomic Constraints for Medium Term Growth: A Model for Chile	Andrés Solimano		
WPS401	Policing Unfair Imports: The U.S. Example	J. Michael Finger Tracy Murray	March 1990	N. Artis 38010