



FOREIGN EXCHANGE RISK MANAGEMENT IN MICROFINANCE

INTRODUCTION

Many microfinance institutions (MFIs) fund a portion of their portfolio by accessing loans or lines of credit in hard currency. In doing so, MFIs incur foreign exchange risk, which is defined as the possibility of a loss or a gain from varying exchange rates between currencies. If not properly managed, foreign exchange risk can result in losses. Taking on exposure to foreign exchange risk makes an MFI vulnerable to factors that are beyond its control. In addition to the risk in changing rates, incurring foreign exchange risk also includes the danger that it might become impossible to carry out currency transactions because of government interventions or a market disruption.¹

The purpose of this focus note will be: 1) to provide MFIs with ways to evaluate and manage foreign exchange risk to minimize exposure and avoid losses, and 2) to highlight the role that lenders and donors can play in reducing the exposure of MFIs to foreign exchange risk.

Several WWB network members have borrowed in hard currency, and two cases will be described in which foreign exchange risk was successfully mitigated using different hedging mechanisms. Additional alternatives for foreign exchange risk management that may be available to MFIs will also be presented. Further, this note will describe approaches developed by two lenders seeking to minimize this risk to MFIs by providing local currency loans under terms and conditions favorable to both lender and MFI. Finally, this note seeks to encourage and underscore the importance of continued efforts by lenders and donors to help MFIs avoid foreign exchange risk to the extent possible.



CURRENCY FLUCTUATIONS: HOW BIG IS THE RISK?

The word devaluation is sometimes loosely used to describe any type of decline in the value of a currency. Below are definitions for changes in currency values.

Depreciation: A decline in the value of a currency in comparison with a reference currency (e.g., the US dollar). Generally, depreciation is a gradual decline, usually occurring over several days or weeks due to market forces of supply and demand, but in some instances, precipitous decline can happen over relatively short periods of time (e.g., Dominican Republic, 2003).

Devaluation: A sudden fall in the value of a currency against other currencies. Strictly, devaluation refers only to sharp falls in a currency within a fixed exchange rate system.² In addition, it usually refers to a deliberate act of government policy, although in recent years reluctant devaluers have blamed financial speculation³, highlighting the role of market forces in devaluations (e.g., Mexico 1995, Malaysia 1997, Argentina 2001).

Appreciation: A gradual increase in the value of a currency, usually occurring over several days or weeks as a result of market forces of supply and demand in a system of floating exchange rates. In contrast, an upvaluation (a word less commonly used) is an official government act that produces a substantial increase in the value of a currency, usually overnight.

WWB selected a sample of 23 reference countries in Asia, Africa, Latin America, Eastern Europe and the Middle East to study the performance of their currencies.⁴ The yearly movements and patterns of depreciation/appreciation were analyzed based on end-of-year exchange rates for each of these currencies vis-à-vis the US dollar over the 1997-2002 period. The data is summarized in Table 1 below.

Table 1
Rates of Currency Depreciation and Appreciation 1998-2002

Country	1998	1999	2000	2001	2002	No. of Years of Currency		Simple 5-year Average 1998 - 2002	5-year CAGR 1998 - 2002
						Depreciation	Appreciation		
1 Bangladesh	-6.3%	-4.9%	-5.6%	-5.3%	-1.6%	5	0	-4.7%	-4.7%
2 Benin	6.5%	-13.9%	-7.4%	-5.3%	19.0%	3	2	-0.2%	-0.9%
3 Bolivia	-5.0%	-5.8%	-6.3%	-6.3%	-8.9%	5	0	-6.4%	-6.5%
4 Bosnia	7.1%	-14.1%	-7.4%	-5.3%	19.0%	3	2	-0.1%	-0.8%
5 Brazil	-7.7%	-32.4%	-8.5%	-15.7%	-34.3%	5	0	-19.7%	-20.6%
6 Colombia	-14.2%	-19.5%	-14.3%	-5.0%	-19.7%	5	0	-14.5%	-14.7%
7 Dominican Republic	-9.0%	-1.6%	-3.8%	-2.8%	-19.1%	5	0	-7.2%	-7.5%
8 Gambia	-4.2%	-4.8%	-22.4%	-12.1%	-27.6%	5	0	-14.2%	-14.8%
9 Ghana	-2.3%	-34.2%	-49.8%	-3.7%	-13.2%	5	0	-20.7%	-23.1%
10 India	-7.5%	-2.3%	-7.0%	-3.0%	0.3%	4	1	-3.9%	-3.9%
11 Indonesia	-42.1%	13.3%	-26.2%	-7.7%	16.3%	3	2	-9.3%	-12.3%
12 Jordan	0.0%	0.0%	0.0%	0.0%	0.0%	n/a	n/a	0.0%	0.0%
13 Kenya	1.2%	-15.1%	-6.5%	-0.7%	2.0%	3	2	-3.8%	-4.1%
14 Mexico	-18.1%	3.7%	-0.6%	4.7%	-11.3%	3	2	-4.3%	-4.8%
15 Morocco	5.0%	-8.2%	-5.0%	-8.1%	13.7%	3	2	-0.5%	-0.9%
16 Pakistan	-4.2%	-11.4%	-10.8%	-4.7%	4.0%	4	1	-5.4%	-5.6%
17 Paraguay	-16.9%	-14.7%	-5.6%	-24.7%	-34.1%	5	0	-19.2%	-19.8%
18 Peru	-13.6%	-10.0%	-0.5%	2.4%	-2.0%	4	1	-4.7%	-4.9%
19 Philippines	2.3%	-3.1%	-19.4%	-2.7%	-3.2%	4	1	-5.2%	-5.5%
20 Russia	-71.1%	-23.5%	-4.1%	-6.6%	-5.2%	5	0	-22.1%	-28.5%
21 South Africa	-16.9%	-4.8%	-18.7%	-37.6%	40.4%	4	1	-7.5%	-10.8%
22 Thailand	28.8%	-2.1%	-13.4%	-2.2%	2.5%	3	2	2.7%	1.8%
23 Uganda	-16.3%	-9.5%	-14.8%	2.3%	-6.8%	4	1	-9.0%	-9.3%
# countries w/ depreciation	16	20	22	19	13	Simple average of the 23 countries:		-7.8%	
# countries w/ appreciation	6	2	0	3	9	Compounded average of the 23 countries			→ -8.8%
# countries - no change in value	1	1	1	1	1				
Total	23	23	23	23	23				

Notes:

- 1 Negative numbers (in gray) denote a local currency depreciation against the dollar.
- 2 Positive numbers (in blue) denote strengthening of local currency, or appreciation vis-à-vis the dollar.

Source: International Monetary Fund Statistics Department, International Financial Statistics, Volume LVI, No. 10, October 2003, Washington, D.C., International Monetary Fund, pages 150-985.

Below are some findings from the data:

- Every year, more than half (57% to 96%) of the countries in this sample experienced depreciation of their currency.
- Nine out of the 23 countries (39% of the total sample) experienced depreciation of their currency every year.
- The currencies of 15 countries (65% of the total sample) depreciated in at least four of the five years analyzed.
- Twenty-two countries (96%) experienced at least three years of currency depreciation.
- With the exception of Jordan, whose currency has been in practice pegged to the dollar, none of the currencies in the sample was stable or appreciated against the dollar for more than two of the five years analyzed.
- Only one country - Thailand - experienced moderate overall appreciation of its currency over the five-year period. Except for Jordan, whose currency remained stable, the rest of the reference countries experienced overall depreciation of their currencies over the period analyzed.
- An analysis of this data on a regional basis reveals that every region - Africa, Asia, Eastern Europe, Latin America and the Middle East - experienced depreciation of its currencies on an aggregate basis over the five-year period.
- On an aggregate basis, the 23 currencies experienced an average annual depreciation rate vis-à-vis the US dollar of 7.8%. The average of the compounded annual declines in the value of the 23 currencies was 8.8%.

The patterns found in this diverse sample of currencies underscore the vulnerability of institutions that, while operating in their local currency, enter into financial obligations denominated in foreign currencies. The

inability to forecast currency exchange rates with a reasonable level of certainty makes it a risky proposition to enter into such obligations without a mechanism to effectively mitigate foreign exchange risk.

Taking on foreign currency obligations without any protection against unfavorable movements in the currency exchange rate exposes the borrower to the possibility of experiencing serious financial problems, including increased financial expenses, reduced sustainability and profitability, and even insolvency. Prudent management guidelines recommend that MFIs avoid speculation to the extent possible.



THE IMPACT OF LOCAL CURRENCY DEPRECIATION

The example provided in Table 2 is a simple demonstration of how an MFI can incur foreign exchange risk due to the volatility of the currency in which it operates.

This example depicts a gradual depreciation scenario. Sharp and abrupt devaluation would result in much higher hard currency financing costs and foreign exchange losses.

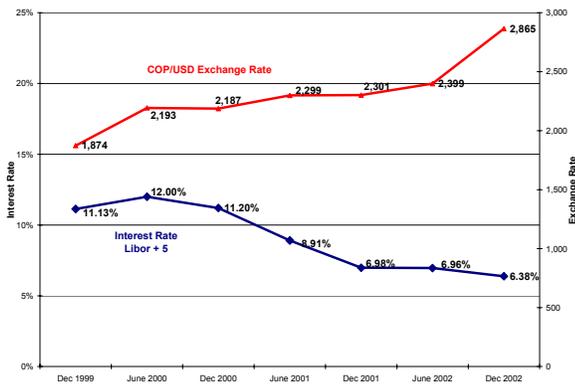
Table 2

Example of Impact on an MFI of Currency Depreciation

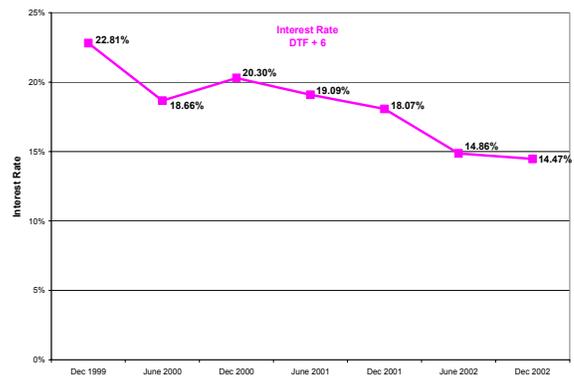
At the end of 1999, a Colombian MFI has the following funding options to borrow US\$200,000 or its equivalent in Colombian pesos (“COP” or “pesos”) for three years, to be onlent locally in pesos. The terms and the evolution of interest and exchange rates over the life the loans, as well as the resulting cash flows under each of the two loan scenarios are shown below. Please refer to Annex 1 for the data and calculations behind the figures and graphs that follow.

US Dollar Loan		Peso Loan	
Principal Amount:	US\$200,000 Equivalent to COP 374,754,000 at Dec 1999 exchange rate	Principal Amount:	COP 374,754,000 Equivalent to US\$200,000 at Dec 1999 exchange rate
Interest Rate:	Libor + 5%	Interest Rate:	DTF ⁵ + 6%
Maturity:	3 years	Maturity:	3 years
Interest Payments:	Semiannual	Interest Payments:	Semiannual
Amortization:	Bullet at maturity	Amortization:	Bullet at maturity

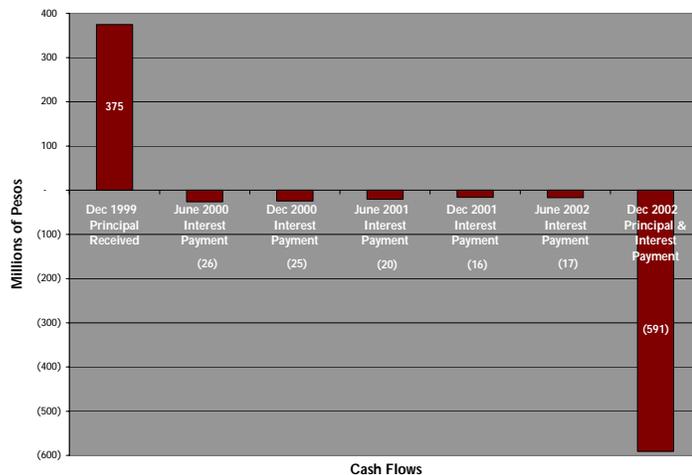
Evolution of US\$ Interest and Exchange Rates



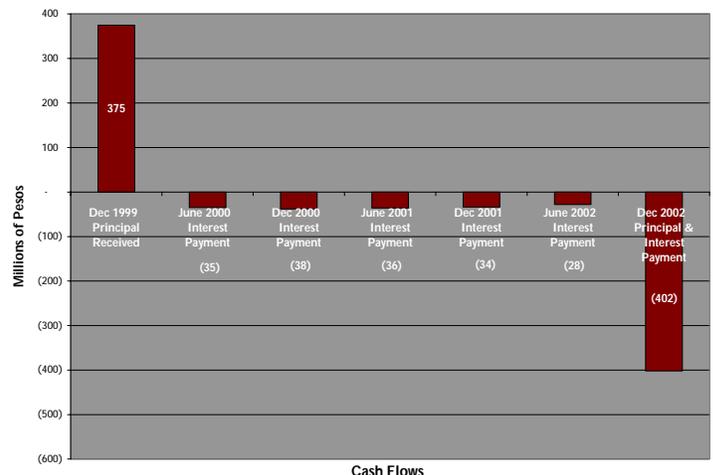
Evolution of COP Interest Rate



USD Loan Cash Flows



Peso Loan Cash Flows



(Table 2 continued)

US Dollar Loan	Peso Loan
<p>At the time of disbursement of the loan, every dollar would buy the MFI 1,873.77 pesos. On one hand, the MFI pays lower interest rates on the dollar loan than it would on the peso loan. On the other hand, as the peso depreciates over the life of the loan, the MFI needs an increasing amount of pesos to purchase each dollar it requires to make its interest payments every six months. Part of the benefit of the lower dollar interest rates is offset by the depreciation of the peso versus the dollar.</p> <p>At maturity of the loan at the end of 2002, the COP/US\$ exchange rate was 2,864.79 pesos for each dollar. The MFI's pesos had depreciated against the dollar by 35%. While the MFI had received the equivalent of 374,754,000 pesos at inception of the loan, at maturity, it will need 572,958,000 pesos to repay the dollar loan, or 153% of the loan amount received in pesos. In other words, a 35% depreciation of the peso means that the MFI requires 53% more pesos than it received at disbursement to repay the dollar loan at maturity. (Please refer to Annex 2 for a discussion of the difference between the rate of depreciation of a currency over a period of time, and the percentage of incremental currency required to purchase a certain amount of the reference currency at the end versus the beginning of the period.)</p> <p>The effective interest rate of the US\$ loan in pesos is 26%.</p>	<p>Higher peso interest rates mean larger interest payments on the peso loan as compared to the dollar loan. However, the impact of the depreciation of the peso on the interest payments on the dollar loan limits the savings on interest vis-à-vis the peso loan. Furthermore, both Libor and DTF drop significantly during the life of the loan, reducing the amount of the interest payments in both loan scenarios over time. Over the life of the loan, the MFI pays 75,258,710 pesos more in interest on the peso loan as compared to the dollar loan.</p> <p>The higher interest payments on the peso loan are more than compensated for by the difference in principal amount in pesos to be repaid at maturity of the loan between the COP and the US\$ loan. Under the COP loan scenario, the MFI owes the original COP 374,754,000 received at disbursement of the loan, or COP 198,204,000 less than the COP amount required to repay the principal on the US\$200,000 loan. Even though the benefit of a lower peso principal amount is realized at the end of the three-year period, in this case it is substantial enough to make the COP loan more economically advantageous to the MFI.</p> <p>The effective interest rate of the COP loan is 19%.</p>
<p>Had the MFI's currency appreciated over the 2000-2002 period (this was the case in two of WWB's 23 reference countries), it would owe less of its local currency in dollars, at maturity of the loan. However, hoping for the currency to stay at a steady exchange rate or to appreciate is a gamble, and the research shows the odds are against this occurring.</p> <p>MFI's should manage foreign exchange risk prudently and avoid speculation as it is not their core business.</p>	

The example above illustrates a way in which an MFI can evaluate the cost of hard currency vs. local currency borrowing. In addition to potential foreign exchange rate movements, interest rates could improve or deteriorate depending on macroeconomic conditions and monetary policy over the term of the loan. Therefore, important considerations are: 1) Management's view on interest rates, including the potential impact of interest rate movements on the MFI's net interest margin and its ability to pass on interest rate increases to clients; 2) The MFI's Foreign Exchange Risk Management Policy setting limits to exposure and ways to mitigate the risk.



FOREIGN EXCHANGE RISK MANAGEMENT IN DEVELOPED AND DEVELOPING COUNTRIES

Creditworthy institutions in developed countries have access to a wide range of financial instruments to hedge foreign exchange risk. Such instruments include swaps, forward contracts, futures, options on currencies, and other derivatives. Derivatives, or risk management products, are instruments derived from an underlying index, such as a currency.⁶ Use of derivatives has not only grown very rapidly in developed markets during the past decade, it has also become more prevalent in a number of developing countries.

Some developing countries with active derivative markets are Mexico, South Africa, Thailand, Brazil, and India. The foreign exchange derivative markets in these countries are very liquid and offer a range of products including forwards, options, swaps and, in some cases, futures. Other developing countries such as Indonesia, the Philippines, Russia, Peru, and Colombia have foreign exchange derivative markets, although with more limited product offerings and less liquidity. However, and in spite of the growing use of foreign exchange derivatives in a number of countries, these products are not currently available in many other developing countries.

Furthermore, country risk considerations and the strict credit requirements of the derivative financial markets may prevent even the strongest institutions in developing countries from gaining access to foreign exchange derivative products.⁷ The provider of the derivative product needs to assess the risk that its counterparty in the transaction will not fulfill its obligation at the delivery date of the contract (“counterparty risk”) and obtain credit approval to take on that exposure. Moreover, in some cases, access to long-term foreign exchange risk management products may be possible, but would entail posting collateral in ways that could be costly. Therefore, the existence of a foreign exchange derivatives market does not in itself guarantee access to these products by interested MFIs.

MANAGING FOREIGN EXCHANGE RISK: THE EXPERIENCE OF WWB NETWORK MEMBERS

While there is no aggregate data available on the level of hard currency borrowing incurred by MFIs, several WWB network members have borrowed in US dollars or euros.

WWB network members and other MFIs operating in diverse financial markets and regulatory environments have used a range of mechanisms to manage foreign exchange risk. The following are four case studies on mechanisms for foreign exchange risk management used by WWB network members and other MFIs around the world.

Case Studies

A. Local Currency Loan Payable in Hard Currency with a Currency Devaluation Account

A loan structure used by the Ford Foundation with MFIs such as Kenya Women Finance Trust is essentially a local currency loan payable in US dollars with a reserve mechanism designed to provide protection to the lender against depreciation of the local currency vis-à-vis the US dollar over the life of the loan.

The mechanics of this loan structure are as follows: the lender disburses an amount in US dollars that the MFI converts into local currency. The principal amount of the loan is set at the local currency amount, but is payable in US dollars at the prevailing exchange rate at maturity of the loan. Under such an arrangement, and without any protective mechanism, the lender would bear the risk of unfavorable movements in the currency exchange rate since the principal amount is set in local currency.

In order to mitigate the currency exchange risk to the lender, the structure incorporates a currency devaluation account. This account is initially funded through a grant from the lender in US dollars, and the borrower commits to periodically depositing additional predetermined amounts in US dollars. The amounts of these periodic deposits are set based on the average depreciation of the local currency vis-à-vis the US dollar over the past ten years. At loan maturity, the borrower pays the lender the principal amount set in local currency and converted to US dollars at the prevailing exchange rate, plus the funds held in the currency devaluation account, provided that the total payment shall not exceed the original loan amount disbursed by the lender in US dollars. Any remaining funds in the currency devaluation account after paying all amounts due to the lender remain the property of the borrower.

The lender mitigates its exposure to foreign exchange risk by requiring periodic US dollar deposits to make up for the depreciation of the local currency in which its loan is denominated. By providing the initial deposit for this account in the form of a grant, the lender shares in the cost of this mechanism for foreign exchange risk management. Furthermore, the lender caps its upside at the amount of its original loan disbursement in US dollars and bears the risk that the agreed US dollar deposits will not suffice to make up for the depreciation of the local currency.

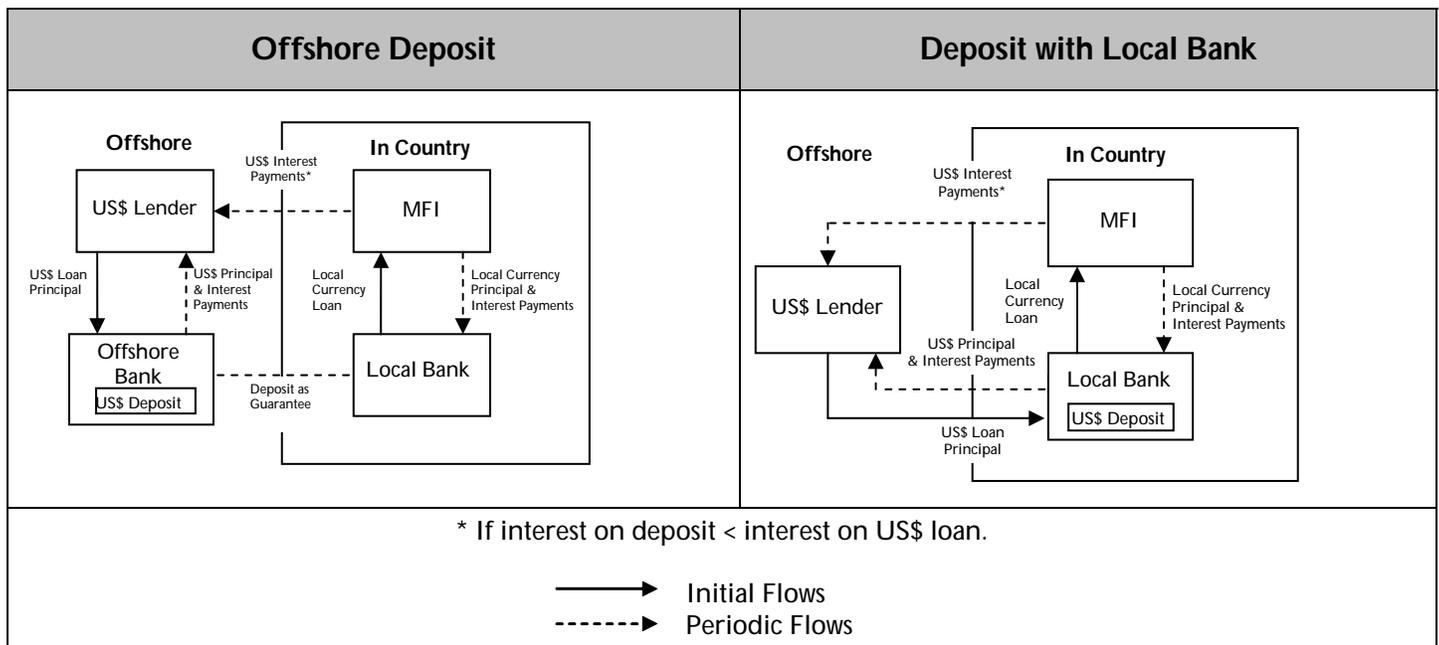
The borrower, on the other hand, is protected from the effect of foreign currency exchange movements on the loan principal amount, and its exposure consists of the deposit commitments to the currency devaluation account in US dollars. Since the borrower will need to purchase the dollars to make the required deposits at the prevailing exchange rate at the time of each deposit, it is exposed in the amount of the future deposits at any given point in time. The borrower's liability on the principal of the loan is capped at the lowest of (a) the sum of the loan principal amount in local currency plus the balance in the currency devaluation account at maturity of the loan, and (b) the original US dollar amount disbursed by the lender as a loan. Therefore, the borrower would never pay more than in a straight US dollar loan, and in case the balance in the currency devaluation account were not enough to offset the loss in value of the local currency loan vis-à-vis the US dollar, the borrower would not be liable for the difference. This risk is born by the lender.

Another important consideration is that even though interest is payable in dollars, it is accrued on the local currency principal amount. Thus, the lender bears the foreign exchange risk on the interest payments.

B. Back-to-Back Hard Currency/Local Currency Loans

WWB's Colombian and Dominican affiliates, as well as other MFIs around the world, use the following system to mitigate the foreign exchange risk with respect to their US dollar loans. The proceeds from the dollar-denominated loan are deposited in a bank in US dollars, while the bank in turn issues a loan to the MFI in local currency, taking the US dollar deposit as collateral. In some countries, one bank can both receive the US dollar deposit and make the local currency loan, while in others, such as Colombia, a foreign bank affiliate is needed to take the US dollar deposit offshore, and a local bank issues the local currency loan⁸ (see Table 3).

Table 3



Some international lenders may require that their loans be leveraged by the MFI by obtaining a local currency loan equivalent to more than one time the amount of the US dollar loan principal. This means that the local bank must be willing to take a US dollar deposit in guarantee for a larger loan amount equivalent in local currency.

Other important considerations when using this approach include the strength of the institution taking the deposit, and the existence and level of deposit insurance. It is also worth noting that the deposit will be subject to risk of intervention by the government of the country where it is maintained. Since governments can restrict access to and transferability of hard currency, particularly in a foreign currency exchange crisis, the economic stability and outlook of a country should be considered when deciding where the deposit should be kept.

This arrangement mitigates the foreign exchange risk to the MFI, transferring the risk on the principal of the US dollar loan to the local bank taking the deposit as a guarantee. The foreign exchange risk

exposure that may remain with the MFI derives from the following two sources:

- 1) the interest rate differential between the US dollar loan and the deposit. This differential can change over time as interest rates fluctuate; therefore, this structure is more economically attractive when working with concessional loans whose lower interest rates can be offset by interest received on the deposit; and
- 2) any mismatch in maturity and amortization schedule of the US dollar loan versus the term of the deposit. For example, an amortizing US dollar loan hedged with a US dollar fixed term deposit of the same final maturity would, as the loan is paid down, leave the MFI with an exposure equal to the difference between the outstanding balance of the loan and the amount of the deposit.

The overall cost of this loan and foreign exchange risk hedging mechanism is determined by the effective local currency loan interest rate available to the MFI plus the differential between the effective

interest rates paid on the US dollar loan and received on the US dollar deposit. Furthermore, any mismatch between the amortization schedule of the US dollar loan and term of the deposit could result in additional costs.

However, even assuming commercial lending interest rates, leveraging the US dollar deposit can enhance the economic viability of this structure. By obtaining a local currency loan equivalent to a multiple of the amount of the US dollar deposit given in guarantee, the MFI can significantly reduce the US dollar interest base for a given local currency loan amount. Some MFIs have been very successful at leveraging their US dollar deposits with local banks and at increasing the level of leverage over time as they integrate into their local financial system.

Finally, this approach also helps the MFI overcome one of its most difficult challenges: establishing relationships with the local financial sector.⁹

C. Forward Contracts

As discussed above, derivatives designed to hedge exposure to foreign exchange risk can be a natural option to mitigate this risk when they are available in the country and currency of the MFI. One example of such instruments is a forward contract, or simply, a forward. In this case, the MFI borrows in hard currency and separately enters into a forward contract, frequently with a third party, to lock in the future rate at which it will buy the hard currency to repay the lender.

The MFI knows with certainty what its cash outflow in connection with its debt repayment will be in local currency. Both the MFI and its counterparty in the forward contract run the risk that the prevailing exchange rate at the delivery date of the forward will be more favorable than the one they have agreed to. Nevertheless, the MFI is not subject to movements in the exchange rate on those payments covered with a forward and knows with certainty what the amount of those payments will be in local currency.

The main risk consideration in this arrangement for the MFI is the counterparty risk inherent to the forward contract: in other words, the risk that the counterparty will fail to deliver the hard currency at the forward delivery date. Therefore, it is of the utmost importance to enter into such agreements only with strong and reputable institutions.

Furthermore, some conditions need to be in place in order for forwards to be an option for MFIs looking to mitigate foreign exchange risk. First, a forward market must exist in the currency of the MFI; in other words, there must be counterparties permitted and willing to enter into forward contracts in that currency. This is the case with some of the more liquid currencies, but not with others. Second, even if a forward market exists, potential counterparties (usually banks) must be willing to enter into a forward contract with an MFI. As discussed earlier, banks require credit approval in order to enter into a forward contract, and the assessment of risk of the MFI as a counterparty is fundamental for the decision. The bank needs to determine the risk that a particular counterparty may not fulfill its obligation under the forward contract, just as it would for a loan transaction.

In addition, there are some practical considerations that determine the feasibility and the level of protection that can be achieved through forwards. Since each forward contract carries a specific delivery date, in order to cover a series of payments (e.g., interest and principal payments), the MFI would need to enter into a series of forward rate agreements to match the debt payment stream. This could be complicated or costly, due to issues such as relatively small payment amounts. Therefore, forwards are more suited to hedging the foreign exchange risk on a bullet principal repayment as opposed to a stream of interest and principal payments. Another limitation on the use of forwards could derive from how far into the future these contracts are available as compared to the maturity of the loan.

Given the practical considerations of forwards mentioned above, MFIs that operate in currencies for which swaps are available should consider that the structural characteristics of a swap might make it better suited to be used with a loan than a forward. Swaps are discussed in more detail below. Therefore, pricing considerations aside, an MFI should favor the use of a swap over forwards to hedge its foreign exchange risk on a loan. In practice, however, forwards are sometimes favored as a more affordable, albeit less effective, hedging mechanism than swaps when used to hedge the foreign exchange risk of the principal of a loan, while leaving interest payments uncovered.

MFIs considering the use of forwards should compare the all-in cost of funding, including the effective interest rate on the hard currency loan and the cost of the forwards, as well as the level of risk mitigation obtained, to that achieved with other foreign exchange risk hedging mechanisms (such as a swap) and to the all-in cost of local currency funding, if available.

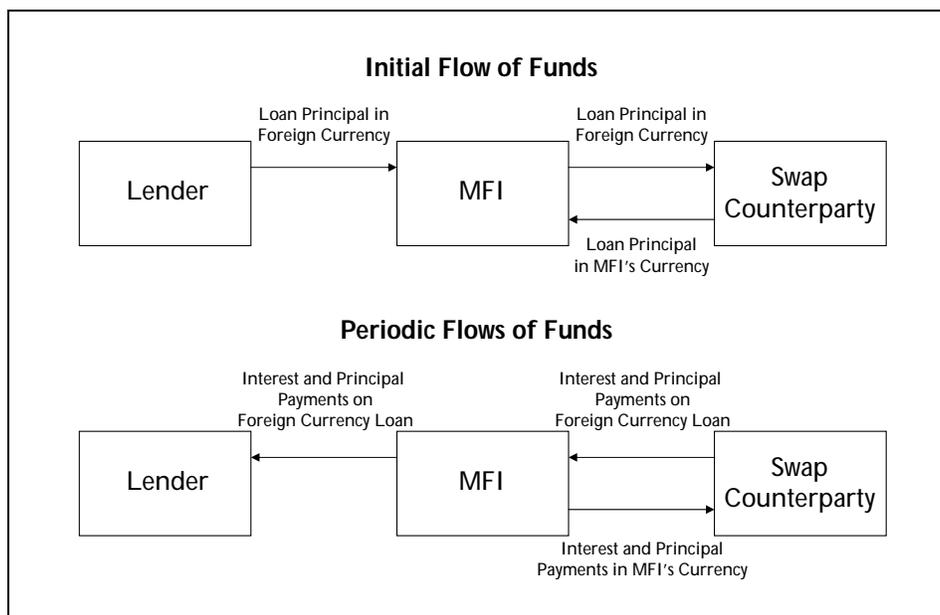
Finally, MFIs considering the use of forwards should establish a policy on the utilization of these

instruments. For example, the policy should state a minimum amount for which forwards can be entered into. This level should consider transaction costs and should be set at an amount for which this hedging mechanism makes economic sense.

D. Swaps

Another derivative widely used for foreign exchange risk management is the swap. In a swap, the two parties involved essentially exchange financial obligations. In other words, an MFI with a liability in foreign currency can in effect exchange it for a local currency obligation. The mechanics are as follows: 1) a lender disburses a hard currency loan to the MFI; 2) the MFI exchanges the principal of the loan in hard currency for a local currency principal amount with its swap counterparty; 3) over the life of the loan, the MFI makes interest payments on the local currency principal amount to its counterparty, and in exchange receives the interest amounts due on the hard currency loan; 4) at maturity of the loan, the MFI repays the principal amount received in local currency from its counterparty and in turn receives the hard currency principal amount owed to its lender (see Table 4).

Table 4



Interest in a swap can be based on either fixed or floating rates. In case the interest paid by the MFI to its swap counterparty is based on a floating rate - as is usually the case with the currencies of developing countries - the actual amounts to be paid will not be known with certainty in advance. Nevertheless, the MFI will not be exposed to foreign exchange risk since its swap obligation will be denominated in local currency. Furthermore, the lender does not bear foreign exchange risk since it receives payment in hard currency.

As in the case of a forward, the main risk consideration for the MFI when entering into a swap is the counterparty risk, or the risk that the counterparty will fail to make the hard currency payments that the MFI in turn owes its lender. Therefore, as mentioned above, MFIs should only enter into such contracts with solid and trustworthy institutions.

Furthermore, for swaps to represent a viable option for foreign exchange risk management for an MFI, there must first exist a swap market in the currency of the MFI. As discussed earlier, among developing countries, only the most liquid currency derivative markets offer swaps. Second, even if a swap market exists, the strict credit requirements of potential counterparties (usually banks) may represent a barrier for many interested institutions. As in the case of forwards, banks assess the counterparty risk and require credit approval in order to enter into a swap. The bank evaluates the risk that a particular counterparty may not fulfill its obligations under the swap, which resemble the obligations under a loan contract.

If currency swaps are available to an MFI, the next consideration should be the all-in cost of funding and how it compares to that achieved with other foreign exchange risk management alternatives and to the cost of local currency loans. Another important element to consider is the time required to execute such a transaction, which could be months. If the

transaction is new to the parties involved, it will require more time for legal structuring, approvals, pricing and execution, especially if large organizations such as multilaterals are involved. In this respect, working with known institutions may facilitate approvals and reduce the time required for due diligence, thus it is important to develop relationships with banks and other potential counterparties in advance. In some instances, this preexisting relationship may influence whether an institution is willing to enter into a swap with an interested party or not.

In addition to mitigating foreign exchange risk, there are potential intangible benefits to an MFI from executing a swap. To have successfully undergone the rigorous credit evaluation process required and to have been approved as a counterparty would be well regarded by other local and international funders. This could help open the door to new funding relationships or be useful when seeking to negotiate improved credit terms with existing funders. Finally, if the swap enables the MFI to take a loan from a certain international lender, this may improve the receptivity of other international lenders to lending to the MFI.

As with forwards, MFIs considering the use of swaps should develop a policy for that purpose. Within the context of a broader financial risk management policy, the specific policy on the use of swaps should state a minimum amount for which swaps can be entered into. This level should account for transaction costs, and should be set at an amount for which this hedging mechanism makes economic sense.¹⁰

The four mechanisms for foreign exchange risk management described above have been applied by MFIs in different stages of development and in a wide range of countries. Case A, Local Currency Loan Payable in Hard Currency with a Currency Devaluation Account, has been made available by a concessional lender, and includes an element of grant or subsidy. Consequently, this structure

is particularly suitable for MFIs at early stages of development. Case B, Back-to-Back Hard Currency/Local Currency Loans, is an alternative that also incorporates an element of subsidy through the usage of concessional loans as collateral for local loans, which are given at commercial rates. This structure can be described as quasi-commercial. Cases C and D, Forward Contracts and Swaps, are derivative products offered in the financial markets and priced based on market parameters, and are fully commercial.

The earlier the stage of development of the MFI and of the currency derivative markets of the country, the more appropriate the concessional alternatives. As an MFI advances in its stage of development and progresses in its integration into the local financial system, other alternatives become feasible. In Case B, the MFI still receives a concessional hard currency loan but also obtains a loan from a local bank at commercial rates. In Cases C and D, forwards and swaps are available to strong and mature MFIs in currencies with liquid derivatives markets.



HOW CAN INTERNATIONAL LENDERS PLAY A ROLE IN HELPING MFIS MITIGATE FOREIGN EXCHANGE RISK?

There appears to be a growing consensus among international lenders that foreign exchange risk represents a threat to the sustainability of MFIs and to their ability to repay their hard currency loans. Experiences with foreign exchange crises have highlighted the vulnerability and potential for disruption in operations of institutions with unhedged hard currency liabilities that can grow by multiples in local currency terms over a short period of time. These crises

include major devaluations such as the ones experienced in the Asian crisis in 1997 or in Argentina in 2001, as well as sharp depreciation of a currency as has been the case in the Dominican Republic since 2002. In light of these events, many international lenders to MFIs believe foreign exchange risk is an issue that needs to be addressed in order to better serve their client bases and to avoid exposing MFIs to undue risk. Notwithstanding the above, trying to tackle this issue by lending to MFIs in their local currencies can represent a major initiative for a lender, given the extent of the changes and preparation required.

First, in order to lend in local currencies, an international lender must devise a mechanism to mitigate its own foreign exchange risk, that is, the risk that it will incur losses due to the depreciation of the local currency vis-à-vis the currency of the lender. In addition, the lender must obtain approval from its investors or funders for the intended use of funds. For example, a commercial investment fund whose investors expect a US dollar return may have to resort to a different investor base in order to fund a local currency lending initiative. Another constraint for a lender seeking to lend in local currency could come from its bylaws. An example is the case of BlueOrchard Finance, whose current bylaws prevent it from making loans in currencies other than US dollars, euros, or Swiss francs. Furthermore, international lenders may face regulatory restrictions in certain countries that can make lending difficult. Examples of such restrictions are found in India and Morocco, which impose interest rate caps on borrowings from abroad.

Despite the hurdles involved, some international lenders are lending to MFIs in local currency, while others are in the process of setting up facilities for that purpose. Oikocredit and Triodos Bank are two international lenders that are providing loans to MFIs in local currency. Each has developed its own foreign exchange risk management mechanism for this purpose.

Triodos combines a local currency loan with a currency swap where available, for example in Indonesia, India, South Africa, Brazil, and Mexico. For those currencies for which swaps are not available, Triodos prices the local

currency loan according to the risk involved, including the foreign exchange risk. When pricing a loan, in addition to the cost of funds, operating expenses and provisions, Triodos adds an element of foreign exchange risk. The foreign exchange risk component of the pricing is intended to compensate for currency depreciation and to preserve the loan fund. The foreign exchange risk charge is based on factors such as the political and macroeconomic situation of the country, its social context, and historical trends in the devaluation of its currency.

In addition to pricing its local currency loans to reflect foreign exchange risk, Triodos's policy is to limit allocation of funds to any single currency to a maximum of 10% of its portfolio. Nevertheless, even with these measures in place, Triodos considers its portfolio of local currency loans as high risk and recognizes that it is subject to the unpredictable fluctuation of its currencies. Therefore, Triodos is prepared to accept marked differences in the performance of its local currency loan portfolio from year to year. While Triodos has stated that it has not experienced major losses in its local currency loan portfolio, it also acknowledges that it has not so far been exposed to sharp currency depreciation or devaluation.

While Oikocredit has traditionally lent in US dollars or euros, it recognizes that most of its borrowers are not in a position to hedge their foreign exchange exposure. It is also aware that, in most cases, Oikocredit itself is not able to hedge its foreign exchange exposure either. Furthermore, the Asian crisis triggered a fundamental change in its view of foreign exchange risk. Oikocredit realized that rescheduling loans was not enough to resolve the major burden that foreign currency liabilities had created for its borrowers in affected countries due to the devaluations suffered. Oikocredit decided that a structural solution was needed to address this problem and so it set up its Local Currency Risk Fund (LCRF).

Oikocredit describes its LCRF as a type of exchange rate risk insurance established with funds received for this purpose from members of Oikocredit. The fund has

grown to more than five million euros as of late 2003 and the target is to reach ten million euros by end of 2005.

The LCRF "insures" the lender, Oikocredit, for fluctuations in the exchange rate between the euro and the local currency of the loan, guaranteeing a 9% return in euros. Local currency loans are extended based on floating market rates for the currency in question with a maximum maturity of six years.

The LCRF receives income from the return on its own invested funds, and from the surpluses on loans granted in local currency, i.e., interest received on local currency loans in excess of the 9% return in euros guaranteed to the lender. The costs to the LCRF derive from any local currency depreciation in excess of the interest rate differential between the local currency interest rate being charged and the 9% guaranteed return to the lender.

The mechanics over the life of a loan are as follows: 1) the borrower repays the loan in local currency; 2) the euro value of each installment and interest payment received in local currency is deducted from the loan value in euros (+ 9% interest p.a.) at the moment it is received; 3) at maturity of the loan, a final calculation is made comparing the counter value of all the exchanged local currency payments over the years with the original amount in euros + 9% interest; 4) if the counter value in euros is higher than the original principal + 9%, the difference is paid into the LCRF - if lower, Oikocredit receives the difference from the LCRF.

Although in principle all countries are eligible for local currency loans, Oikocredit avoids countries with extremely high inflation or countries assessed as too risky. Other policies include a maximum loan amount per "project" as well as per country.

Oikocredit's experience with the LCRF has so far been mainly positive. Oikocredit has been able to finance MFIs that it otherwise would not have been able to lend to. In addition, MFIs value the fact that they do not bear any foreign exchange risk. Thus far, more has been paid into the fund than has been paid out. However, as in the

case of Triodos, no major devaluation has been experienced. Oikocredit is aware that in a major crisis scenario, such as the Asian crisis, the LCRF could incur big losses. Nevertheless, based on its experience, Oikocredit has plans to expand its local currency lending to some new countries in Africa and Central America, and probably Eastern Europe.

Other international lenders have also recognized the potential impact of foreign currency risk on MFIs and the need to offer loans that do not cause MFIs to incur this risk. Examples of international lenders that have already responded to this need through local currency lending, or are in the process of setting up facilities for this purpose, are Finance for Development (FMO), BIO, responsAbility and Deutsche Bank. Another major international bank, Société Générale, is also providing local currency funding through its branch network.



CONCLUSIONS

Many MFIs frequently face the decision of whether or not to obtain funding in hard currency and incur foreign exchange risk. Funding in hard currency may result from one of the following factors.

- The MFI has either limited or very expensive local currency borrowing options. Additionally, in some cases, international lenders are prepared to extend larger loans on favorable terms to MFIs (e.g., unsecured) compared to local banks.

- The MFI takes the view that the all-in cost of borrowing in hard currency will be cheaper than borrowing in local currency. In other words, the MFI believes that the rate of depreciation of its local currency will be less than the differential between the local and hard currency borrowing rates. This situation illustrates a common dilemma for MFIs: choosing between higher local borrowing rates and lower hard currency borrowing rates coupled with local currency depreciation.
- The MFI offers loans to clients in hard currency because financial transactions take place in hard currency in the country of the MFI (e.g., Bolivia) and there is a need to match currencies. For a discussion of levels of dollarization in the 23 reference countries in WWB's sample, please refer to Annex 3.

If the MFI chooses to take on foreign exchange risk, it should do so under established policies that set out levels of maximum exposure and methods for mitigating the risk. These policies should be developed keeping in mind that exposure to foreign exchange risk makes MFIs vulnerable to factors that are beyond management's control, and that taking on such risk is outside the scope of activities of an MFI. In order for these policies and methods to be practical and economically feasible for foreign exchange risk management (e.g., minimum amount of exposure to qualify for hedging), they should take into account the costs of hedging such exposure.

If an MFI is to take on foreign currency exposure, prudent guidelines recommend a ratio of foreign currency assets to foreign currency liabilities of no greater than 1.1 and no less than 0.9 as a manageable level of foreign exchange risk. As a percentage of equity, it is generally advised that foreign currency exposure should not exceed 10% to 15%. Beyond such levels of exposure, WWB recommends that MFIs choose local currency funding options unless they are prepared to manage the foreign exchange risk associated with borrowing in hard currency through a hedging mechanism.

Furthermore, to refine and customize the foreign exchange risk assessment, WWB suggests that MFIs perform sensitivity analysis on their projections by exploring the impact of potential movements in exchange rates on their profitability and financial condition. Such an exercise can provide valuable insight into an MFI's ability to withstand currency volatility and be useful in setting foreign exchange risk policies that are tailored to each institution's situation and financial structure.

Even though the increasing number of floating currency regimes around the world lessens the probability of severe and abrupt depreciation or devaluation, we continue to see examples of currencies that experience substantial depreciation over relatively short periods of time (e.g., the Dominican Republic). MFIs that borrow in hard currency without hedging their exposure to foreign exchange risk are vulnerable to unfavorable currency movements, which are usually difficult to predict. Furthermore, the stability in net interest margin that results from avoiding or hedging foreign exchange risk is much more beneficial to an MFI than any potential short-term gain that could derive from exposure to foreign exchange risk.

WWB commends those international lenders that, recognizing the potential impact of foreign exchange risk on MFIs, have developed facilities to lend in local currency or structures to mitigate the risk. WWB encourages all international lenders and donors to explore ways in which to minimize this risk to MFIs when structuring their facilities. By allowing MFIs to focus on their core mission and business without incurring undue foreign exchange risk, international lenders and donors will further promote the strengthening and growth of microfinance.

RATE OF DEPRECIATION VERSUS INCREMENTAL CURRENCY REQUIREMENTS

Why does the Colombian MFI in “Example of Impact on an MFI of Currency Depreciation” need 53% more pesos than it obtained at disbursement of the dollar loan to repay it at maturity, if the Colombian peso has depreciated by 35%?

Even though in practice it is common to equate currency depreciation with the percentage incremental currency required to purchase a certain amount of a reference currency after a period of depreciation, technically these are two different concepts.

Depreciation is the decline in the value of a currency with respect to another currency. It is calculated as follows:

$$\frac{(\text{End of Period Exchange Rate} - \text{Beginning of Period Exchange Rate})}{\text{End of Period Exchange Rate}}$$

The incremental amount of a currency required to purchase a certain amount of a reference currency at the end of a period as compared to the beginning of the period is calculated as follows:

$$\frac{(\text{End of Period Exchange Rate} - \text{Beginning of Period Exchange Rate})}{\text{Beginning of Period Exchange Rate}}$$

Conceptually, the difference between the two measures can be illustrated through a simple example:

Beginning of Period	End of Period
1 peso = 1 dollar	1 peso = 0.67 dollar
	or
	1.5 pesos = 1 dollar

At the end of the period, the peso has depreciated as follows:

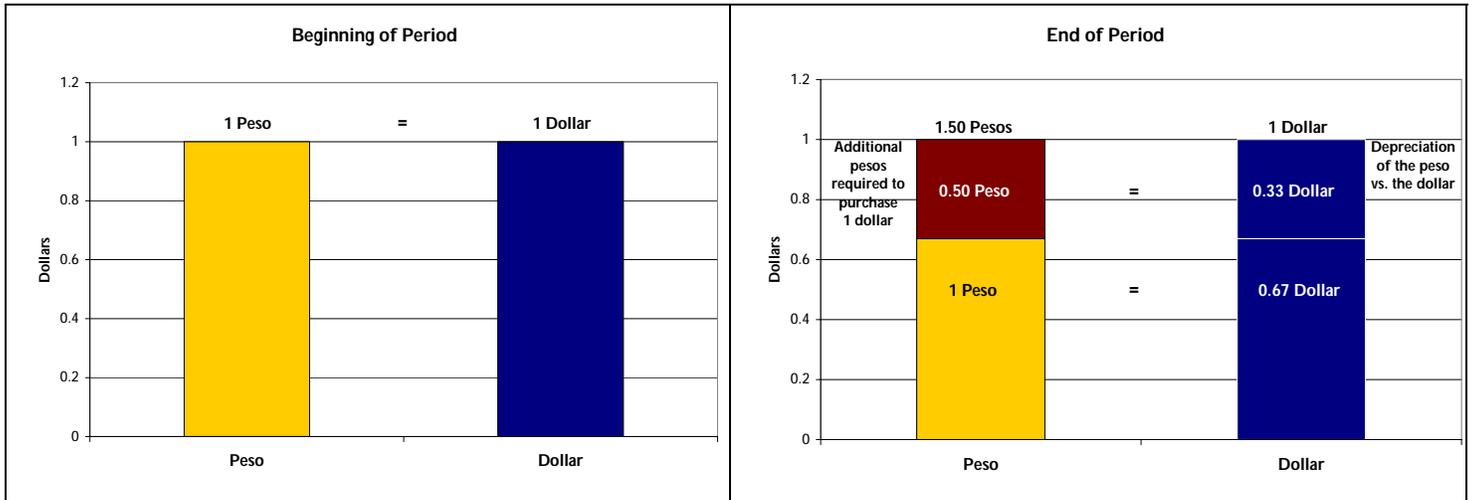
$$\frac{(\text{End of Period Exchange Rate} - \text{Beginning of Period Exchange Rate})}{\text{End of Period Exchange Rate}} = \frac{(1.5 - 1)}{1.5} = 33\%$$

This 33% depreciation is reflected in the fact that one peso is worth 0.67 dollars at the end of the period as opposed to one dollar at the beginning of the period.

As a result of the 33% depreciation of the peso vs. the dollar, 50% more pesos are required to purchase a dollar at the end of the period than at the beginning:

$$\frac{(\text{End of Period Exchange Rate} - \text{Beginning of Period Exchange Rate})}{\text{Beginning of Period Exchange Rate}} = \frac{(1.5 - 1)}{1} = 50\%$$

The following graphs illustrate the difference and relationship between the two measures.



After being at parity at the beginning of the period, the peso depreciates by 33% against the dollar. In other words, the peso loses one third of its beginning value of one dollar. This means that each peso buys 0.67 dollars at the end of the period. Therefore, in order to purchase the additional 33 cents per dollar, an incremental 0.50 pesos are required for each dollar or 50% more pesos than at the beginning of the period, bringing the exchange rate to 1.50 pesos per dollar.

DOLLARIZATION

I. What Is Dollarization?

Dollarization generally occurs when residents of a country extensively use the US dollar or another foreign currency alongside or instead of the domestic currency. The word dollarization is sometimes used loosely to mean different things. It can refer to countries that use the US dollar as the legal currency. In other cases, it is used to mean countries that have high levels of dollar-based activity in the country. It is also used to mean any country using a foreign currency, not necessarily the US dollar, in its economy. Dollarization is currently a much-debated topic among macroeconomists.

Dollarization is becoming increasingly common in many emerging market economies. Governments borrow in dollars, individuals can hold dollar-denominated bank accounts, and entrepreneurs, companies, and households can borrow in dollars both domestically and abroad. The region of Latin America and the Caribbean is the most dollarized region of the world, followed by Asia. Africa has consistently been the least dollarized region of the world.

II. Full Dollarization (Also Called “Official Dollarization”)

What Is Full Dollarization?

Full dollarization occurs when a country abandons its own currency, and officially adopts a foreign currency - most commonly the US dollar - as its predominant or exclusive legal tender for all financial transactions.

Which Countries Are Fully Dollarized?

Table 1 shows the three largest dollarized countries in the world: Panama, Ecuador, and El Salvador.

**Table A:
Three Largest Fully Dollarized Economies Outside of the United States**

Country	Date of Dollarization	Population (2003)	GDP (2002)
Panama	1904	3.0 million	US\$17.3 billion
Ecuador	2000	13.7 million	US\$41.7 billion
El Salvador	2001	6.5 million	US\$30.0 billion

Sources: *Basics of Dollarization*; *CIA World Factbook*.

In addition to the countries shown in Table A, there are 28 other countries or nation states that are fully dollarized. The largest of these are Puerto Rico (population 3.5 million), a US Commonwealth, and Bhutan (population 1.5 million), an independent nation that uses the Indian rupee. The remaining 26 nations each have populations of less than 200,000, and many are territories, commonwealths, or dependencies of other countries. Some are city-states fully integrated into their neighbors’ economies, such as Monaco, Liechtenstein, and Andorra.

Why Do Countries Fully Dollarize?

Countries have dollarized at different times in history for different reasons. Panama dollarized in 1904 following its independence from Colombia. Ecuador dollarized in 2000 in response to an economic crisis. Since its full dollarization, Ecuador's inflation rate has dropped and GDP growth has risen. El Salvador dollarized in 2001 to further tie its economy to that of the United States, where it sends two thirds of its exports, and from which it receives approximately US\$2 billion in remittances annually.

The most commonly cited reasons for a country to officially or fully dollarize are:

1. Elimination of currency risk.
2. Lower inflation.
3. Faster growth.
4. "Deeper" financial markets.¹¹
5. Lower interest rates.
6. Fiscal budget discipline.

What Are the Disadvantages of Full Dollarization?

The following are typical reasons why some oppose full dollarization:

1. Loss of control over monetary policy.
2. Loss of "lender of last resort" facilities.
3. Increased risk to the banking system.
4. Loss of seignorage (government's profit from issuing currency).
5. Loss of a national symbol.

III. Partial Dollarization (Also Called "Unofficial Dollarization")

What Is Partial Dollarization?

There are several forms of partial dollarization. Any type of dollarization that is not "full" or "official" would be included in this category. The broadest and most recent definition is an economy in which households and firms hold a fraction of their portfolio (including money balances) in foreign currency assets and/or where the public and private sector have debts denominated in foreign currency.

Partial dollarization can take various forms, including asset substitution, currency substitution, semi-official dollarization, asset dollarization, and liability dollarization. Asset substitution occurs when people hold foreign bonds and deposits abroad. Currency substitution refers to the use of foreign money as a means of exchange. If currency substitution occurs, people hold large amounts of foreign currency deposits in the domestic banking system (if allowed) and subsequently foreign notes for use as payment. Wages, taxes, and everyday expenses such as groceries and electric bills, are still paid for in local currency. Large items, such as cars and homes, are often paid for in the foreign currency. An even greater use of foreign currency occurs in semi-official dollarization, when foreign currency is allowed to be used as legal tender and may even dominate bank deposits. Prices in the local currency

may be indexed to the foreign currency rate, or can be denominated in the foreign currency. Some economists also make a distinction between asset dollarization, the use of foreign currency in any of the three functions of money: as a unit of account, means of exchange, or store of value, and liability dollarization, the holding of foreign currency debt obligations, either by the domestic banking system, or by the government.

In most unofficially or partially dollarized economies, the US dollar is the foreign currency of choice. This is particularly true in Latin America and the Caribbean. Russia also has a high level of partial dollarization.

Which Countries Have the Highest Levels of Partial Dollarization?

Table B shows the levels of partial dollarization of the 23 WWB reference countries. Column A shows the ratio of foreign currency deposits to total deposits in each country. This has been widely used as a best estimate method to measure partial dollarization. A more recent measurement, in column B, uses a composite index that is more broadly defined.

**Table B:
Partially Dollarized Economies**

Country	Region	A ¹² 2001 Percentage of Foreign Currency Deposits/Total Deposits	B ¹³ Degrees of Dollarization
Bolivia	Latin America	91.5	Very high
Paraguay	Latin America	66.9	Very high
Peru	Latin America	66.0	Very high
Bosnia-Herzegovina	Europe	62.5	High
Ghana	Africa	30.8 (in 2000)	High
Jordan	Middle East	N/A	High
Uganda	Africa	29.9 (in 2000)	High
Russia	Europe	34.3	High
Pakistan	Asia	31.0	High
Philippines	Asia	30.7	High
Indonesia	Asia	20.1	High
Kenya	Africa	15.2	Very Low
Mexico	Latin America	10.8	Moderate
Brazil	Latin America	N/A	Moderate
Colombia	Latin America	N/A	Moderate
South Africa	Africa	6.2	Low
Thailand	Asia	1.3	High
Bangladesh	Asia	0.5	Very Low
Benin	Africa	N/A	Very Low
Dominican Republic	Latin America	N/A	Very Low
Gambia	Africa	N/A	Very Low
India	Asia	N/A	Very Low
Morocco	Africa	N/A	Very Low

Sources: Dollarization of the Banking System: Good or Bad, and Addicted to Dollars.

As can be seen in Table B, four countries (of which three are in Latin America) have foreign deposits comprising over 50% of total deposits. Three countries are classified as having very high levels of dollarization. At the other end of the spectrum are countries such as South Africa, Thailand, and Bangladesh, each with less than 10% of deposits in foreign currency. Interestingly, Thailand is ranked differently in the two columns. It has a negligible percentage of deposits in foreign currency (column A), yet is ranked “High” in column B due to holding a high proportion of private sector external foreign debt.

IV. What Does Dollarization Have to Do with Microfinance?

There is a wide range of levels of dollarization in countries where WWB affiliates or associates are active. None of these countries is fully dollarized. The extent of dollarization will affect how an MFI handles foreign currency-denominated loans from an international lender, and therefore the resulting currency risk. Dollarization will also affect the currency risk of international investors making equity investments in MFIs. The dollarization level of a country (combined with local banking regulations) also determines whether an MFI can onlend in a foreign currency (typically dollars), or accept dollar-denominated deposits. In fact, the level of dollarization is inversely related to an MFI’s foreign exchange risk - the more dollarized an economy, the less foreign exchange risk an MFI incurs, and vice versa. Below are several aspects of dollarization and how it affects MFIs.

Full Dollarization Eliminates the Currency Risk of MFIs Borrowing in Foreign Currency.

The level of dollarization in a country becomes important to a microfinance institution that is receiving loans denominated in dollars or other foreign currencies from an international lender. An MFI in a fully dollarized country will bear no foreign exchange risk. For example, in Ecuador, an MFI such as Banco Solidario will bear no currency risk, nor will the lender. However, all other risks will still exist, including country risk. From the lender perspective, it will want to be confident that currency risk issues will not compromise the MFI’s ability to repay the loan. However, even a highly or fully dollarized economy that uses US dollars may present difficulties for a lender providing funds in other currencies, such as the euro.

Dollarization May Help an MFI Better Match the Currencies of its Assets and Liabilities.

In a highly dollarized economy, such as Bolivia, an MFI can use dollars it has borrowed to onlend to its clients, thereby matching dollar-denominated assets from its portfolio with liabilities from its loans due to foreign lenders. MFIs that accept deposits may be allowed to accept client deposits in dollars. Dollar-denominated deposits can further help an MFI’s currency matching. In a highly dollarized economy, dollar deposits and loan repayments by an MFI’s clients both provide sources of dollars with which to repay a foreign lender.

Dollarization May Enable an MFI to Leverage its Foreign Currency Assets.

In some partially or highly dollarized countries, an MFI receiving a dollar-denominated loan will have the ability to put these funds on deposit in-country. It may be able to leave the dollars on deposit and leverage them to get access to local currency. The leverage may be one, one and a half, or two times the dollar value equivalent of the funds on deposit, and in some cases even more.

The Absence of Dollarization Leaves MFIs Receiving Foreign Currency-Denominated Loans With Foreign Exchange Risk Exposure.

In a country with no dollarization, an MFI holding a dollar-denominated loan will have currency risk exposure proportional to the amount of the foreign currency loan. In this scenario, the MFI will need to mitigate this risk through some type of hedging product. If an MFI has no means of hedging the foreign exchange risk, and its local currency is unstable, the MFI may want to consider whether it is financially viable to accept the loan. Even if the local currency is not depreciating or devaluing against the dollar at the time of accepting the loan, it may depreciate against the dollar (or euro) over the life of the loan. MFIs with no currency risk hedge in this type of situation will want to closely monitor their exposure.

In light of the risk that taking on dollar loans can represent to MFIs, there is a need in the microfinance sector for foreign exchange risk mitigation products to meet MFI needs, particularly those operating in countries with no or low levels of dollarization.

ANNEX SOURCES

A. Conversations

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- Liliana Rojas-Suarez, Consultant, Inter-American Development Bank.
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FOOTNOTES

- 1 *Toolkit Liquidity Management*, Bankakademie, October 2000, page 244.
- 2 A fixed exchange rate system is a system in which the values of various countries' currencies are tied to one major currency (such as the US dollar), gold, or special drawing rights. H. Riehl, *Managing Foreign and Domestic Currency Operations*, 1983, page 434.
- 3 <http://economist.com/research/economics>.
- 4 This analysis was prepared in conjunction with WWB's Third Capital Markets Workshop. The selection of countries reflects the location of the MFIs that participated in the workshop. South Africa was added since it is a large microfinance market.
- 5 Fixed Term Deposit rate.
- 6 <http://www2.ifc.org/proserv/products/risk/risk.htm>.
- 7 Ibid.
- 8 Julie Abrams et al, *The Finance of Microfinance*, MicroRate, October 2002, page 4.
- 9 Ibid.
- 10 Interviews conducted by Julie Abrams with Pedro Arriola, General Manager, Caja Los Andes; Markus Kratzer, Senior Investment Manager, DEG; and Violeta Velasquez, Investment Officer, IFC Mexico.
- 11 For example, Panama, fully dollarized for 100 years, is the only Latin American country with a liquid market for 30-year mortgages in its local currency - the dollar.
- 12 Column (A) shows foreign currency deposits/total deposits from De Nicoló, Patrick Honohan, and Alain Ize, August 2003, "Dollarization of the Banking System: Good or Bad?" World Bank Policy Research Working Paper 3116, pages 33-37. No data from this source was available for the following eight countries: Benin, Brazil, Colombia, Dominican Republic, Gambia, India, Jordan, and Morocco.
13. Column (B) This measure looks at a composite index of dollarization including foreign currency bank deposits as a share of broad money, total external debt as a share of GNP, and domestic government debt denominated in foreign currency as a share of total domestic government debt. The category "Very Low" was added for countries with 10% or less of each of these measures. From Reinhart, Carmen M., Kenneth S. Rogoff and Miguel A. Savastano, October 2003, "Addicted to Dollars," NBER Working Paper 10015, pages 19 and 60.

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