

Foreign Exchange Risk Management Practices of Microfinance Institutions

Discussion Paper

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Abstract

Foreign exchange risk remains a significant problem for microfinance institutions (MFIs). Many sources of potential funding for MFIs remain untapped due to the high risks of currency devaluation faced by these funding sources. Specifically, debt capital is available for MFIs but foreign exchange risk is a potential deterrent. This paper reviews current practices in the management of foreign exchange risk for and by MFIs. The advantages and disadvantages of these practices are discussed and alternative practices proposed.

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I. Executive Summary

The largest sources of funds for microfinance institutions (MFIs) are most often denominated in hard currencies (U.S. Dollars, Euros, etc.). However, MFIs must make loans denominated in local currency, immediately exposing MFIs to foreign exchange rate risk. Furthermore, these institutions operate primarily in developing countries where the risk of local currency devaluation is the highest. These risks prevent access to many potential funding sources, specifically, debt capital. Foreign exchange rate risk is a deterrent to lending to MFIs, particularly those institutions operating in unstable economic and political environments. However, foreign exchange risk is only one factor in a decision to lend or not to lend to an MFI. Other factors such institutional management and lending methods are also important.

Currently, the most common foreign exchange management programs in place to protect investors and institutions from the risk of exchange rate devaluation involve either indexation of loans to clients or local currency lending backed by hard currency deposits or guarantees. The former practice passes the risk of exchange rate devaluation on to the client, the least likely party able to carry the risk. The latter methodology involves substantial assistance from commercial banks and/or government agencies and the costs are often prohibitive.

In order to increase the amount of lending to MFIs, three potential areas of foreign exchange rate risk management exist. The first potential method is to do nothing directly to manage exchange rates risk, but to diversify both the source and the use of debt financing. This involves borrowing across a few different hard currencies (U.S. Dollar, Euro, and Yen) and lending across many different currencies. The two sources of

diversification under this method can substantially reduce currency risk, but the possibility of a serious devaluation remains. The second potential method involves lending in many different countries (diversification) and the purchase of insurance products designed to protect against catastrophic loss from political and economic risks. In theory, the market for such insurance exists, but the cost of these products may lead to above-market lending rates for clients. The third potential method for protecting lenders involves the use of currency swaps. A currency swap is a financial contract where a borrower swaps their debt obligations in one currency for the obligations of another borrower in a different currency. Currency swaps immediately remove currency risk since the institution's assets and liabilities are as a result denominated in the same currency. However, the opportunities for such swap agreements are likely to be minimal for the currencies where MFIs operate.

The opportunity to minimize foreign exchange rate risk for MFIs exists but there remain limitations to their implementation. The task at hand is to better quantify both the advantages and costs of each practice.

II. Introduction

Microfinance institutions (MFIs) generally raise capital denominated in hard currencies (U.S. Dollars, Euros, etc.). However, MFIs must lend these funds in their local currency, immediately creating foreign exchange rate risk. Furthermore, these institutions operate primarily in developing countries where the risk of local currency devaluation is the highest. These risks prevent access to many potential funding sources, including debt capital. Foreign exchange (forex) risk management remains a significant problem for any international financial institution, but the problem is that much greater for MFIs that are forced to borrow abroad and operate in an unstable economic environment, preventing access to many potential funding sources.

In this study I review the existing forex risk management practices of MFIs. Information for the report was gathered through a review of existing literature, personal interviews of practitioners, and a study of the foreign exchange volatility in the Opportunity International Network. From the review of existing literature and personal interviews I found that the existing practices fall into two broad categories. First, MFIs may pass foreign currency risks onto clients through the indexation of loans to hard currencies. This first method of addressing forex risk is discouraging because it transfers risk onto the party that is least capable of bearing such risk. The second category of existing practices is a transferring of hard currency loans into local currency loans. This practice involves the use of commercial banks and/or government agencies that back the local currency loans. It is reported that this practice is not more widespread because the costs are too high - the loans to client must be made at higher rates to cover the commercial bank fees.

From this review I draw three general conclusions. First, MFIs need additional funding to meet demand, and debt capital is the most likely source for this funding. Many reports indicate that the demand for microlending is high and that existing equity capital is insufficient to meet the demand.¹ Second, foreign exchange rate risk is significant, and though it is only one factor in a decision to lend to an MFI, it is a strong deterrent. The currencies in which most MFIs operate are highly susceptible to devaluation against most major currencies such as the U.S. Dollar and the Euro. It is in these currencies that any new debt capital would likely be denominated. Finally, the existing forex risk management practices are prohibitively expensive, either to the client or the institution.

Based on these conclusions I propose three new practices designed to encourage lending to MFIs in hard currencies – diversifying across the network both the source of debt capital and the use of debt capital, insuring the risk of devaluation in the network, and using currency swaps at individual institutions. Each of these three practices has its advantages and disadvantages, and similar strategies are currently in use by many commercial organizations. What is unknown at this point, however, is the cost of these programs. Further study is necessary to better quantify both the advantages and costs of each practice.

¹ See for example “Banks for the Poor: Creating an upward spiral” by Larry Reed, Opportunity International Network

III. Review of Current Practices

Following is a review of the existing forex risk management practices gathered from existing literature, both academic and trade related, and personal interviews of Opportunity International personnel. The academic literature focuses on how financial institutions can manage forex risk through derivative and other capital markets, the trade literature discusses how some MFIs have partnered with commercial banks to create some operational hedges, and the personal interviews provided details on the advantages and disadvantages of both the standard models in the academic literature and the existing operational hedges.

An intensive review of the academic literature on risk management practices of small financial institutions was not successful. In particular, a benchmark for MFI forex risk management was not found in the risk management practices of small financial institutions. Most models of financial risk management for financial institutions follow a standard framework that does not distinguish between the sizes of the institutions. The standard framework has three main components – measuring value at risk to exchange rate fluctuations, purchasing derivatives or adjusting portfolios to offset this risk, and continuously monitoring the risk position.

Most academic models direct the financial institution to first measure its exposure to foreign currency fluctuations. The most popular methodology for this first step is to apply a Value-at-Risk (VAR) measurement. VAR is a statistical measure of the largest expected loss to a portfolio from a particular risk variable (in this case currency fluctuations) at a given level of confidence. The VAR measure warns managers of the potential maximum loss that could occur. For example, a MFI could calculate the VAR

of their loan portfolio at a 90 percent level of confidence. This may result in an estimated 5 percent loss on any given day due to fluctuation in exchange rates. This means that manager can be confident that on any given day there is only a one in ten chance that the portfolio could incur a 5 percent maximum loss. The higher the level of confidence desired, the larger the maximum expected loss that could occur.

The second step in this model for the financial institution manager is to then decide if this level of risk is acceptable, and if not, make changes to the portfolio to reduce the risk or take offsetting positions in the capital markets. A financial institution with exposure to fluctuations in the exchange rate value of their local currency can purchase forward contracts, options, futures, or currency swaps. Each of these foreign exchange contracts can quickly minimize or eliminate forex risk. The MFI could also put in place operational hedges by denominating their debt in the same currency as their assets (loans). The third step in the standard model of forex risk management for financial institutions is to continuously monitor the exchange rate risk. A drawback to this model is that applying VAR analysis to a portfolio requires the use of historical data, both actual changes in value or descriptive statistics such as standard deviation. Currency markets are, however, volatile and the level of volatility is constantly changing. During strong economic conditions, volatility tends to be low, but geopolitical tensions and changes in capital flows can quickly lead to higher volatility and greater risk of loss. Therefore, it necessary to constantly update VAR measurements and make appropriate changes to hedge positions, raising the cost of hedging.

Extensive capital markets exist for financial institutions to offset currency risks. These markets are large and widespread. The Bank of International Settlements (BIS) reported that between June 2000 and June 2002, the gross notional values of outstanding,

over-the-counter (OTC), foreign exchange contracts rose 36%, from 94,008 billion to 127,564 billion.² Thus, markets exist for MFIs to offset their forex risk, but many do not do participate. The reason is cost, and this high cost is driven by two factors. First, forward and futures contracts are primarily denominated in large quantities of hard currency. One forward or future contract could easily be larger than the entire loan portfolio of the MFI. Forward contracts normally trade in values of \$1 million or more, and the futures contracts are also traded for higher levels of currencies. For example, Mexican Pesos trade on the Chicago Mercantile Exchange (CME) for \$500,000 pesos per contract. These levels of cash flow are much higher than what most MFIs could produce in any one period. Smaller contracts are available, particularly for forwards, but this again raises the cost of the hedge.

The second factor is that most MFIs operate in currencies that are not actively traded. For currencies to be actively traded there must be substantial trade between the country and the rest of the world. This is not often true in developing countries. Since the market is not active and the risk of devaluation is high, forward contracts in these currencies are normally priced at substantial forward discounts. When the forward rate is lower than the spot rate, the foreign currency is selling forward at a discount; or the exchange rate is at a forward rate discount. In this case, the foreign currency is expected to depreciate against the base currency, usually the U.S. Dollar. Commercial banks operating in the forward markets for developing countries generally price in heavy forward discounts. Therefore, this derivative contract may protect the MFI against a complete devaluation of the local currency, but it does not eliminate much of the risk and essentially locks-in a higher cost of debt repayment.

² BIS (1999) "The Global OTC Derivatives Market at End-June 1998, Table 1, <http://www.bis.org>.

Many MFIs have turned to operational hedges for forex risk management. An operational hedge involves restructuring the debt so that repayments are made in the local currency of the MFI, in this way, completely eliminating their forex risk. This approach is consistent with the standard framework, but once again, not without a cost. For example, MFIs in Colombia have successfully covered their forex risk by denominating all their borrowings in local currency. To do so, they arrange for commercial banks to accept the proceeds from a dollar-denominated loan as a deposit. A local bank then uses this deposit as collateral for a Colombian Pesos loan to the MFI. The MFI can then repay the dollar denominated loan using the proceeds from its local currency lending; the risk has been transferred to the banks. According to MicroRate, these transactions have been successfully used in Colombia at a reasonable cost. However, this reasonable cost may be due to the interest rate regulation in Colombia, protecting the MFI from high bank fees and large spreads. This protection may not exist in other markets.

Similar operating hedges have been used for other MFIs. In one example, proceeds from a dollar denominated loan are used as collateral for a letter of credit issued by a U.S. commercial bank. The letter of credit is issued to a commercial bank in the MFI's home country and is used as collateral for a loan denominated in the home currency. The cost of this type of operational hedge is explicit – the fee charged by the U.S. commercial bank for issuing the letter of credit. Letter of credit fees generally range from 1 to 3% of value. This fee significantly raises the cost of funds to the MFI or lowers the return to the U.S. lender. Another cost with these types of arrangements is the spread between the collateral loan and the local currency loan, also significantly raising the cost of funds to the MFI.³ Some government-backed programs exist for MFIs to obtain these

³ ACCION Bridge Fund manages forex risk in this manner.

types of agreements at subsidized rates. Examples include programs through the International Finance Corporation (IFC) and the U.S. Agency for International Development. It is not, however, certain that these programs reduce the above mentioned costs.

A common forex risk management practice on the part of MFIs is to index their client loans to a hard currency such as the U.S. Dollar or the Euro. Many Opportunity International Implementing Partners in the East European region use this approach. An index loan sets the rate of interest on the clients' loans based on the exchange rate value of the local currency. When the local currency experiences a devaluation, the clients' interest payments rise, providing the additional cash flow necessary for the MFI to repay its U.S. Dollar obligations. Passing forex risk on to the borrower in this manner is both dangerous for the client as well as the institution. The client may be able to handle this burden if the currency experiences a slow devaluation; a gradual rise in the client's interest rate payments may be accompanied by higher cash flow from his or her growing business. However, if the currency experiences rapid devaluation, normally caused by hyperinflation in the home country, the client will assuredly have difficulty meeting the obligations and since this will be true for all clients of the MFI's, the institution is likely to fail.⁴

Another common practice for managing forex risk is to do nothing at all. At the institutional level this means that the MFI is bearing all of the risk. This of course is dangerous given the low capital base of most MFIs, but it does not mean it will not be successful. There are examples of MFIs that have been able to bear the risk of changes in currency value. They have achieved this by earning a high return on assets. One such

⁴ See Vander Weele and Markovich, "Managing High and Hyper Inflation in Microfinance: Opportunity International's Experience in Bulgaria and Russia," *Microenterprise Best Practices* August 2001.

example is Finde of Nicaragua, an MFI with a portfolio of only \$7.3 million. This institution has hard currency denominated obligations but achieves such a high rate of profitability that forex exchange rate volatility has not caused any significant loss.⁵ Essentially, a good rate of return of the portfolio can cover a multitude of problems. Therefore, if the MFI can focus its energy on producing a strong rate of return on assets (reducing default, controlling operating expenses, monitoring its costs of funds, etc.) it is likely to achieve a sufficient capital base that will absorb volatile swings in the exchange rate value of its debt obligations.

D. Alternative Foreign Exchange Risk Management Practices

In this section I propose three new practices designed to encourage lending to MFIs in hard currencies: (1) diversifying both the source of debt capital and the use of debt capital, (2) insuring the risk of devaluation in the network, and (3) using currency swaps. The first proposal is for the network to borrow substantial funds in hard currencies and allocate these funds across many different MFIs operating in many different currencies. This proposal for managing forex risk rests on the possibility that significant diversification benefits are possible across the network. If this is so, the network could raise debt capital for all of its implementing partners and any forex risk is likely to be absorbed in the pool of cash flows generated by these partners and used to meet the obligations. Therefore, it is first necessary to get an idea of the level of risk in the network portfolio.

⁵ “*The Finance of Microfinance*”, MicroRate, October 2002.

To look at the level of foreign exchange risk in the Opportunity International Network I measured the correlations in the U.S. Dollar value of the outstanding loan portfolio of the network for the three-year period beginning January 2000 and ending December 2002.⁶ Table 1 contains the correlation coefficient matrix for the U.S. Dollar value of the outstanding loans in the four regions of the network.

Table 1.

	<i>LATIN AM</i>	<i>ASIA</i>	<i>AFRICA</i>	<i>E. EUROPE</i>
LATIN AM.	1			
ASIA	0.813916353	1		
AFRICA	0.919008966	0.929036997	1	
E. EUROPE	0.944411757	0.929378653	0.974647687	1

The table shows a high level of correlation across the regions, suggesting that there are little diversification effects in the network portfolio. It should however be noted that much of the correlation is due to tremendous growth in each region's portfolio over this period. The strong upward trend in lending activity for each region creates a portion of the high correlation effects. To partially correct for this trend, an ANOVA test of the regions was conducted and the results suggests some level of diversification in the portfolio. The F-test for the source of variation concludes that there is significant variation across the different regions (F-value = 44.86, p-value = .0001). This result suggests that diversification benefits are possible – currency volatility in one region of the network does not imply equal volatility in another. Of course this is only a one-factor test and many factors other than the currency changes may be driving the differences in variances across regions. Further testing in this area is necessary to identify sources of variation.

⁶ Source: Partner Reports, 2002 Q4.

Despite the possible diversification from differences in currency changes across the network, substantial risk remains. Some currencies could incur such a large devaluation in a given period that the cost of servicing the debt for that MFI could not be absorbed by the cash flow from the other institutions. For example, over the period beginning January 2000 and ending December 2002 the Cedis of Ghana exhibited a devaluation against the U.S. dollar of more than 50%. The cost of servicing any debt obligations for the Partner would be substantial, and it would be necessary for other currencies in the network to exhibit high rates of appreciation against the U.S. Dollar to cover the costs.

Given the risks across the network it would seem that the first proposal – borrowing in hard currency by the network and allocating the funds across many different MFIs operating in many different currencies – would not reduce forex risk. However, another source of substantial diversification effects exists. It is possible to reduce risks by diversifying across the sources of funds. Table 2 contains the correlation coefficient matrix for U.S. Dollar relative to three major currencies over the same period, January 2000 and ending December 2002.⁷

Table 2.

	<i>U.S./U.K</i>	<i>U.S./Euro</i>	<i>Japan/U.S.</i>
<i>U.S./U.K</i>	1		
<i>U.S./Euro</i>	0.920643805	1	
<i>Japan/U.S.</i>	-0.409738758	-0.175827971	1

⁷ Source: Federal Reserve Board, FRED.

This table shows that although the Pound Sterling and the Euro are highly correlated, there exists a strong negative correlation between the Yen and the Pound Sterling, and the Yen and the Euro, relative to the U.S. Dollar. Therefore, if the network incurs debt in three major currencies such as the U.S. Dollar, the Euro, and the Yen, and then distributes these funds across many different currencies, a reduction in the risk of exchange rate changes is possible. Although it is possible that each of the developing market currencies would move against all three hard currencies in the same manner, any higher debt service costs in one hard currency can be offset against lower costs in another.

The second proposal combines the diversification benefits just described with insurance products designed to protect against catastrophic loss. As was mentioned above, one currency could incur such a large devaluation in a given period that the cost of servicing the debt for that MFI could not be absorbed by the cash flow from the other institutions. Insurance products exist to assist multinational firms operating in countries with high levels of geopolitical and economic risks. These products are primarily public agency guarantees, but some private insurance companies are now offering many different types of catastrophic loss policies. In this case, the insurance company bears the risk that a major devaluation occurs in one of the countries. The public agency products of this type generally cover war and political turmoil, two events likely to lead to currency devaluations, but other economic risks could be negotiated with under private insurance contracts. Potentially companies for this type insurance product include AIG and National Indemnity.

The possibility of self-insurance also exists. For example, Oikocredit raised 6 million Euros to create a fund that will cover the risk of currency losses on loans to three MFIs in the Asia region. The fund reimburses Oikocredit whenever exchange rate changes lower the value of the local currency debt payments needed to meet hard currency debt obligations. In this program, interest rates on the local currency loans are higher than the hard currency program, covering some of the exchange rate risk, but passing some of the cost of this protection onto the client.

A third possibility for reducing forex risk in MFIs exists at the institutional level. MFIs in the network could begin using currency swaps. A currency swap is a financial contract where a borrower swaps their debt obligations in one currency for the obligations of another borrower in a different currency. Currency swaps immediately remove currency risk since the institution's assets and liabilities are as a result denominated in the same currency. For example, a MFI operating in Colombia could borrow in U.S. Dollars and then swap their debt obligations with an organization that has debt obligations in the local Pesos, but is receiving cash flow denominated in U.S. Dollars. One such organization would be an exporting firm that has debt and other expenses in Colombian Pesos but sells its goods in the U.S. for dollars. Most commercial banks operate in the swap market and could act as intermediaries. The cost of these swaps may be prohibitive as the commercial bank may view the MFI as a greater risk than the exporting firm. This greater risk implies that the bank spread would be as high as that in the case of the collateralized loans discussed earlier. A possible means of reducing these costs is a government agency guarantee. The World Bank currently provides currency swaps for many of its programs, but there is no report of these contracts being used by MFIs. It is possible that the opportunities for such swap agreements are minimal for the currencies where MFIs operate. Many developing countries do not have the high level of foreign trade necessary for sufficient counterparties to exist.

E. Summary, Conclusions, and Plans for Further Study

Three general conclusions can be drawn from this study of forex risk and MFIs. First, MFIs need additional funding to meet demand, and debt capital is the most likely source for this funding. Second, foreign exchange rate risk is significant, and though it is only one factor in a decision to lend to an MFI, it is a strong deterrent. The risk of devaluation against most major currencies such as the U.S. Dollar and the Euro is high, and it is in these currencies that any new debt capital is likely be denominated. Finally, the existing forex risk management practices are prohibitively expensive, either to the client or the institution.

Further research on this issue is necessary. Case studies can expand on this research by providing numerical analysis of different forex risk management practices. For example, a numerical analysis of an individual MFI in the network would look at existing portfolio structures and estimate how varying denominations of loans would benefit the institution under different currency exchange rate values. It would be of further benefit if many institutions could be studied so as to look at any correlations across different regions and currencies. These types of analytical studies serve to both measure the extent of risk and address the best practices in risk management.

Additional research is necessary to identify potential intermediaries and/or counterparties to any potential currency swap agreements. As described, the World Bank provides currency swaps for its programs but no such program exists for MFIs. Money center banks and other international lending organizations may be able to find counterparties for currency swaps in the developing countries where MFIs operate.

The results of this study are not conclusive, but do lay some groundwork for further study that may lead to an effective exchange rate risk management tool or pooling mechanism. Your comments and suggestions are most welcomed.

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