

Silver Award Essay

Solution for Hedging Foreign Exchange Risk in Microfinance Investments: The Case for a Private Sector-Philanthropic Community Partnership

Abstract

As the number of microfinance institutions (MFIs) that rely on commercial sources of funding grows, the issue of foreign exchange (FX) risk is becoming a more prevalent concern for both investors and MFIs. The risk to investments posed by currency fluctuations has led many microfinance investment vehicles (MIVs) to lend predominately in dollars or euros. While this practice of lending in hard currency protects investors, it shifts the FX risk to MFIs, which employ the hard currency debt to fund portfolios of micro loans denominated in local currency. This currency mismatch between the MFIs' loans and the capital that funds MFIs creates risk to the MFI: if the local currency of the country in which an MFI operates depreciates against the U.S. dollar, then the MFI will be saddled with a larger-than-anticipated debt obligation.

Recognizing that MFIs are poorly equipped to manage FX risk, the microfinance industry is currently seeking ways to minimize or eliminate the FX risk inherent to its global business. One proposal in particular, appears promising: creating a "natural hedge" by pooling loans denominated in different emerging market currencies. In this paper, we build on this concept and look for a practical, sustainable solution. We propose a partnership between the private sector and philanthropic community to overcome a major obstacle, which currently prevents the private sector from providing risk management services to the microfinance industry. By effectively leveraging the expertise and resources of the private sector and the financial resources of the philanthropic community, such collaboration across sectors has the potential to eradicate a major source of risk to microfinance investments.

Introduction

As the number of microfinance institutions (MFIs) that rely on commercial sources of funding grows, the issue of foreign exchange (FX) risk is becoming a more prevalent concern for both investors and MFIs. The risk to investments posed by currency fluctuations has led many microfinance investment vehicles (MIVs) to lend predominately in dollars or euros. While this practice of lending in hard currency protects investors, it shifts the FX risk to MFIs, which employ the hard currency debt to fund portfolios of micro loans denominated in local currency. This currency mismatch between the MFIs' loans and the capital that funds MFIs creates risk to the MFI: if the local currency of the country in which an MFI operates depreciates against the U.S. dollar, then the MFI will be saddled with a larger-than-anticipated debt obligation.

Recognizing that MFIs are poorly equipped to manage FX risk, the microfinance industry is currently seeking ways to minimize or eliminate the FX risk inherent to its global business. One proposal in particular, appears promising: creating a "natural hedge" by pooling loans denominated in different emerging market currencies (Dodd and Spiegel 2005 and Fernando 2006). In this paper, we build on this concept and look for a practical, sustainable solution.¹ Specifically, we propose the creation of a separate entity that would assume the FX risk of microfinance investments. It would manage this risk by:

1. Creating a pool of currency risks that would be managed by financial advisors familiar with FX trading and risk management; and
2. Employing capital sourced from the philanthropic community to create a "backstop" that would allow the portfolio to weather short-term turbulence in the markets.

To achieve optimal FX risk management, it is essential that the microfinance industry benefit from the risk management expertise of the financial sector. We therefore propose a partnership between the private sector and philanthropic community to overcome a major obstacle which currently prevents the private sector from providing risk management services to the microfinance industry. It would draw upon the established infrastructure and expertise of the former and the patient capital of the latter. Such a collaborative effort will build a portfolio of currency exposures that assumes the FX risks facing MFIs. The partnership will allow MFIs to reduce or eliminate FX risk, thereby alleviating the mismatch between revenue and debt, securing the real value of their debt obligations, and providing added stability to their business models. By effectively leveraging the expertise and resources of one and the financial resources of the other, such collaboration across sectors has the potential to eradicate a major source of risk to microfinance investments.

Creating a pool of FX risks

We propose the creation of a foreign exchange risk management service (or RMS) that would pool together the FX risk of microfinance investments across different MIVs. RMS would assume the FX risk by entering into a forward contract that allows an MIV to lock in a future exchange rate. In this way, an MIV would be immune to future fluctuations in exchange rates, and RMS would be able to manage the FX risk through diversification.

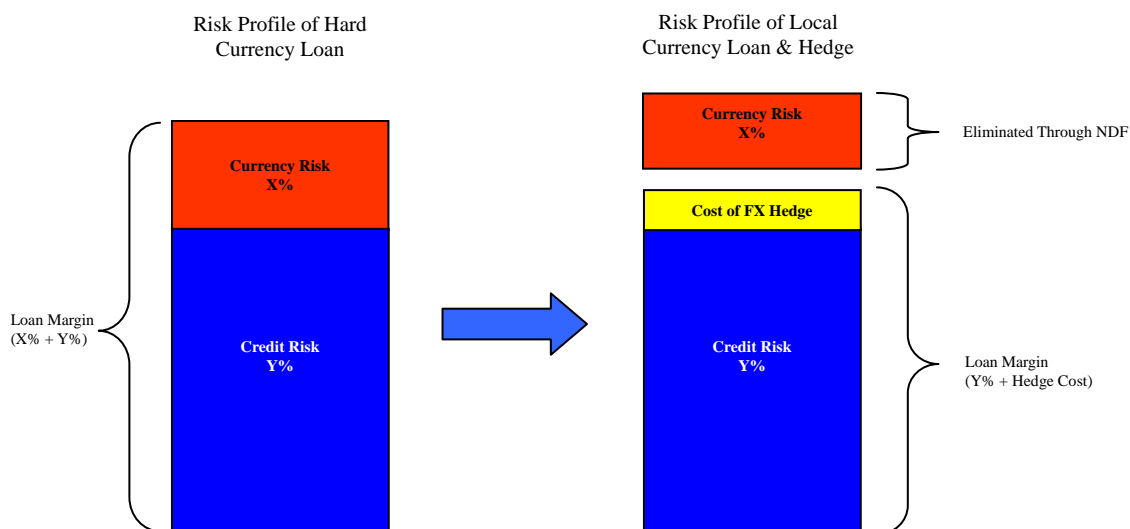
¹ There have been efforts that seek to mitigate FX risk through portfolio diversification, but so far, a solution tailored to the needs of the microfinance community has yet to exist.

The concept of mitigating risk through diversification is based on modern portfolio theory, which proposes that grouping relatively uncorrelated and diversified investments will reduce the risk of an overall portfolio, allowing the portfolio to weather economic disruptions that impact specific investments. Underperformance or value loss that affects some portions of the portfolio should be counteracted by the positive performance of other portions of the portfolio. With sufficient diversification across positions that move independently from one another over time, the portfolio will aim to produce stable long-term returns.

Dodd and Spiegel (2005) applied this theory of diversification to FX risk. They hypothesized that, given the low historical correlation observed among the currencies of developing countries, one could create a diversified portfolio of loans denominated in local currencies, such that the movements of the individual currencies should offset one another. Using historical analysis, they demonstrated how a portfolio made up of loans denominated in the currencies of different so-called "frontier" economies could reduce the amount of foreign exchange risk, while still achieving an eight to ten percent return. Their research indicated that diversification across emerging market currencies does produce substantial benefits - the currencies by and large move independently of one another, thereby reducing the overall FX risk of the entire portfolio.

RMS takes a slightly different approach by allowing investors to parcel out the FX risk from the credit risk of their investments through the use of derivatives. The separation of FX risk from credit risk allows investors to issue local currency loans to MFIs without facing the risk of local-currency depreciation. By eliminating currency risk, MIVs will be able to focus on their core business of analyzing and managing the credit risk of loans to MFIs. This separation of FX risk from credit risk would ultimately benefit MFIs, as loan margins would then reflect only their credit risk. Given the fact that many of the MFIs receiving commercial funding have a strong credit standing, this should reduce the overall cost of debt. Diagram 1 below illustrates how hedging the FX risk lowers the cost of borrowing to MFIs.

Diagram 1: Comparison of two risk profiles



To create a portfolio of FX risk, RMS enters into non-deliverable forward contracts (NDF) with MIVs. NDFs are forward contracts that set an exchange rate for a future date. The term “non-deliverable” refers to the fact that no actual exchange of currencies takes place. Rather, at the settlement of the contract, the two parties settle the difference between the spot exchange rate and the previously agreed-upon exchange rate in a hard currency (generally U.S. dollars). By allowing settlement in hard currency, NDFs avoid the potential problems of converting and expatriating illiquid currencies.

As each NDF contract matures, RMS will either make a payment to, or receive a payment from, the MIV counterparty, depending on whether the currency depreciated or appreciated relative to the U.S. dollar. The settlement amount will be determined by comparing the exchange rate specified in the NDF contract with the spot exchange rate on the date of settlement and multiplying the difference by the notional value of the contract. All settlements will be in USD, thereby avoiding the complexities and costs of delivering local currencies.

A significant benefit of NDFs is the absence of an upfront cost—the cost of the hedge is factored into the future exchange rate. For currencies that are traded, like the Indian rupee and the Mexican peso, there are NDF markets from which RMS can take its price. For other currencies, however, RMS will set a price based on the principle of covered interest rate parity. Covered interest rate parity postulates that the differential between the forward exchange rate and the spot exchange rate is determined by the interest rate differential between the two countries, such that no arbitrage opportunities exist to crystallize profit by shifting capital to higher interest rate countries.

Performance of the Portfolio

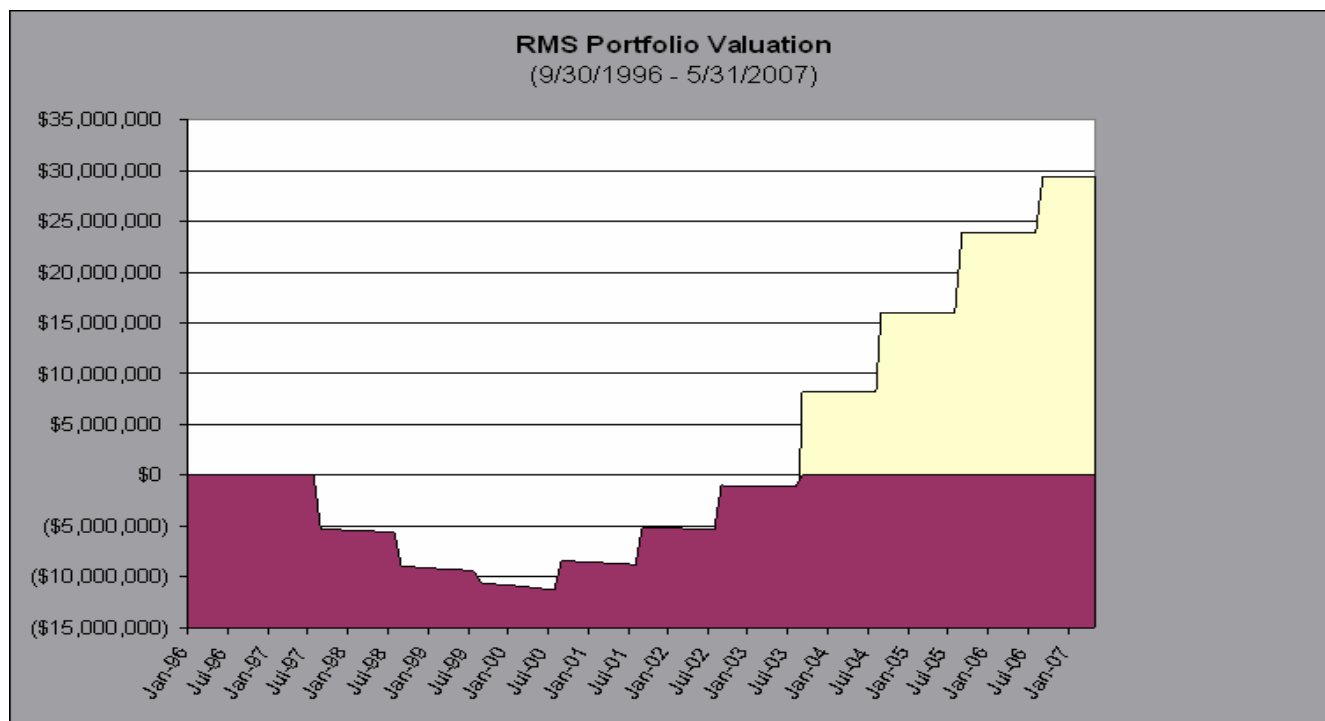
The hedges that allow MIVs to lay off FX exposures result in a portfolio of currency risk that must be managed through diversification. To understand the dynamics involved in managing this portfolio, we created a financial model that tracks the performance of a hypothetical portfolio over time. For our analysis, we used a sample portfolio of NDFs based on \$200 million worth of microfinance investments. The sample portfolio contained NDFs in thirty currencies, with weightings that were based on CGAP data of actual amounts of microfinance investments that took place from 2005 to 2006. We then looked at an eleven-year span from September 1996 to July 2007 and examined how this hypothetical portfolio would have performed over this period. The period includes several major currency crises: the Asian crisis (1997-1998), the Russian ruble crisis (1998), and the Argentine peso crisis (2001-2002). To price the NDFs, we obtained historical interest rate and foreign exchange rate data from the International Monetary Fund's International Financial Statistics. Taking a conservative approach, we assumed that no MIV would enter into an NDF in which it would lock in an exchange rate that is 85 percent below the spot exchange rate (that is, the cost of the hedge is so high that the MIV would either not hedge or simply make the loan in hard currency). We also used market-driven NDF prices, if they were better (for the MIV) than were the prices we generated through covered interest rate parity.

On the whole, RMS' portfolio performs quite well. Although many of the world's emerging market currencies became significantly more correlated immediately following major market disruptions, they subsequently reverted back to their prior uncorrelated states in the months following the initial disruption. Diagram 2 shows the portfolio gaining almost \$30 million over the 11-year period through the settlement of NDF contracts. Yet despite the portfolio's resilience and profitability, there are several reasons why a financial backstop is necessary for RMS to operate (and why the private sector cannot manage the FX risk by itself).

Capitalization

Although RMS' portfolio of currency exposures performed well over the eleven years, the portfolio would have suffered significant losses in its first years of operation. In its first year alone, it would have had to pay over \$5 million in the settlement of NDF contracts, and it would have faced a net cash outflow for the first three years of operations, before it started to take in any revenue. Overall, it would take seven years before RMS could begin to build up its cash reserve, and all of the \$30 million is "earned" over the last four years of the 11-year period. Due to the potential for such volatile short-term cash-flows, RMS would have to be backed by a financial cushion to support it in the short-run.

Diagram 2: Eleven-year performance of currency portfolio (without a financial backstop)

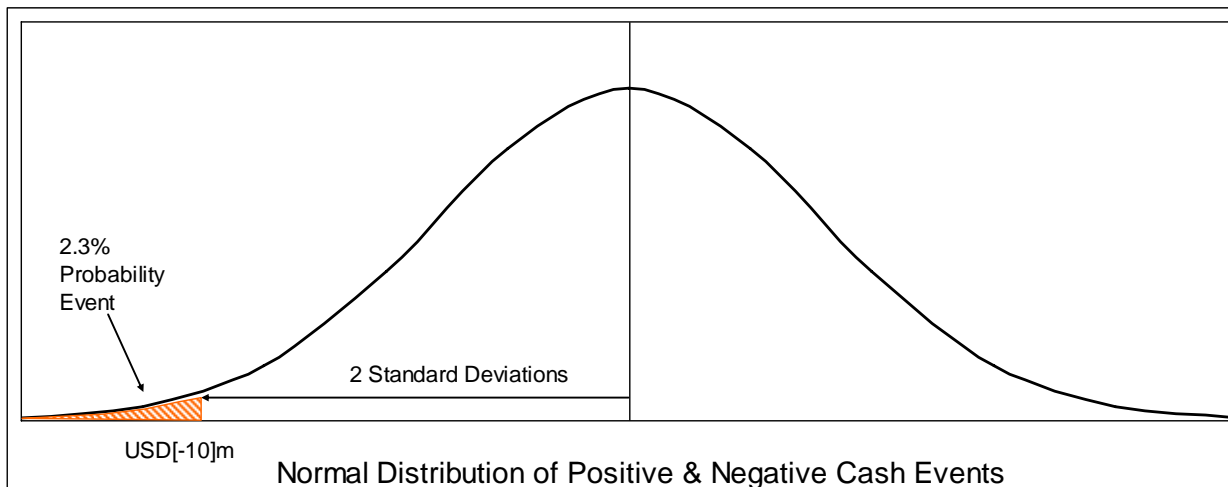


Volatility

The actual cash-flows related to contract settlements provide only one indication of how untenable the portfolio would have been without the support of a financial backstop. Another indication is based on the probability of the portfolio experiencing a major loss over a certain period in time. This measure, called Value-at-Risk (VaR), is what banks use to manage their own risks. The VaR is the maximum loss not exceeded with a given probability (defined as the confidence level), over a given period of time. Diagram 3 illustrates this, below.

Diagram 3: Explanation of Value-at-Risk

Value-at-Risk Analysis



To calculate VaR, we examined the month-to-month "mark-to-market" value of the portfolio, which values the portfolio on an ongoing basis by matching the portfolio's positions against the prevailing spot exchange rates. We converted these numbers into a one-year VaR such that we are 97.7 percent confident that the portfolio will not incur a loss that is greater than the VaR over a one-year period.

Based on historical data, the one-year VaR of our hypothetical portfolio would have been over \$18 million. Without a backstop to help absorb the risk of drastic swings in the value of the portfolio, no business would be willing to bear all of the risk for such uncertain returns.

Pitfalls of historical analysis

Finally, past performance should not be considered a precise predictor of future performance. Just because a hypothetical portfolio of currency exposures would have performed well in the past does not mean that the same portfolio will realize the same gains going forward in time. This caveat is especially likely to be true in light of globalization. As frontier country economies continue to develop and open up to the world's capital markets, one would expect the correlation across their currencies to increase over time.²

Raising a financial backstop

Our analysis shows the difficulty of managing a book of FX risks. Although the portfolio performs well over the long run, concerns regarding the short-term liquidity and volatility of the portfolio make the prospect of managing FX risk through diversification a risky proposition. The challenge is to bolster RMS in such way that it is able to overcome any short-term turbulence that may prevent it from becoming financially sustainable. One way to do this is through the creation of a financial backstop.

² To analyze changes in the level of correlation among the currencies in the RMS portfolio we calculated the correlation of a sample basket of currencies in RMS' portfolio over several time periods. The highest average correlation was over the past year (September 2006 – August 2007) at 0.24, significantly exceeding the average correlation during previous crisis periods. Whether this increased level of correlation among emerging-market currencies represents a new trend in the global economy or a temporary anomaly is beyond the scope of this paper.

The backstop would be a pool of funds that provides RMS with liquidity of last resort. If RMS has to pay out on its obligations to MIVs but lacks the funds to do so, then it would draw from the backstop and replenish it any time it receives a payment from the settlement of contracts. A major advantage of the backstop is its ability to hedge loan amounts many times its own size. Because the settlement of NDF contracts will always be less than the entire loan (notional) amount (since NDFs take the net difference between the previously-agreed upon exchange rate and the spot exchange rate), the size of the backstop can be just a fraction of the total amount of local currency loans, without jeopardizing the financial health of RMS. In our historical analysis, we set the backstop at \$20 million to support roughly US\$200 million in loans (so that the ratio of notional amount is ten times the amount in the backstop). Assuming that the backstop earned a risk-free interest rate over time and that RMS replenished the backstop any time that 1) RMS received a payment and 2) the backstop was less than \$20 million plus accrued interest, we found that RMS would have had to dig into the backstop from September 1997 to August 2001. The worst period was September 1999, when RMS – after paying out to its counterparties three years in a row – would have taken close to \$6 million out of the backstop to cover its costs in settling the NDF contracts.

The funds that comprise the backstop should constitute “patient” capital—money that is either donated or lent at a discounted rate with flexible repayment terms (flexible because RMS may take several years before making returns on its portfolio, depending on market conditions). In the long run, RMS could, over time, pay down the principal as it builds up its own cash reserves. The goal is to create a financially self-sustaining entity that facilitates capital markets activity in these developing economies.

Partnerships to create new markets

RMS offers a practical solution to the problem of FX risk management in microfinance investments. By pooling together the currency exposures of several MIV loan portfolios via non-deliverable forward contracts, RMS will create a solution where no other solution exists—allowing individual MIVs to isolate and eliminate their own FX risk using derivatives. In this way, microfinance fund managers can focus on investing and achieving returns that will attract additional capital for investment in frontier economies.

RMS would not be possible, however, without collaboration across sectors. It depends on patient capital from both the philanthropic community and the capital markets private sector. Donors would contribute the equity of last resort and the private sector would contribute its capital markets infrastructure and expertise. Each must share a common mission of enabling the microfinance industry to tap the international capital markets. Only through such a collaborative effort is it possible to mitigate the foreign exchange risk and therefore attract additional investment capital to these countries.

While an MIV could theoretically create its own diversified portfolio as a means to hedge itself against FX risk, establishing a third party hedging solution that serves the entire microfinance industry will lower the cost of each hedge transaction through economies of scale. The savings would be passed on to MFIs and their borrowers. The goal is to promote additional capital investment into developing economies—to the ultimate benefit of the economically active poor—by removing a major source of risk to investors and lenders alike.

Should RMS succeed in facilitating capital markets activity in these developing economies, we believe that there will be many more opportunities for opening up these markets even further. RMS could extend its services beyond the microfinance investment community to investors interested in financing other types of microenterprises in developing countries. It could serve as an aggregator and packager of

risk to third-party investors. It might eventually expand its mission to serving as a “banker’s bank” to the microfinance industry – a type of investment bank with a specific focus on serving clients who require specific services tailored to the needs of the microfinance industry. Once a market begins to form, opportunities abound. What’s necessary now is an injection of patient capital to serve as a catalyst for opening these markets.

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