

# **BANYAN**GLOBAL

## **BANYANGLOBAL LEARNING SERIES**

### **SHIFTING TECHNICAL ASSISTANCE NEEDS FOR COMMERCIAL MFIs: A FOCUS ON RISK MANAGEMENT TOOLS**

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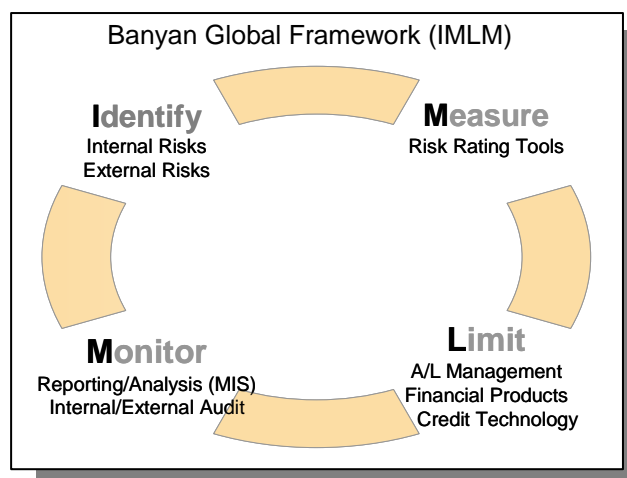
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Banyan Global (formerly GMI) is a development consultancy firm that is committed to improving livelihoods through market approaches to international development. Banyan Global brings a unique market-focused perspective to microfinance by actively involving current and former professionals from the private commercial sector and formal financial markets in its advisory work. By accessing these resources and know-how, Banyan Global is able to support microfinance institutions (MFIs) as they grow and become increasingly sophisticated and complex. Risk management is one area where Banyan Global has adapted many of the tools and practices used by formal financial institutions to the reality of MFIs. Banyan Global changed its name from GMI in October 2005.

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## I. EXECUTIVE SUMMARY

In recent years, microfinance institutions (MFIs) have been shifting away from their reliance on donor financing and transitioning to commercial funding sources such as client deposits and loans from commercial banks and private investors. With such funding come more stringent repayment schedules and higher cost-of-funds, exposing an MFI to additional risks such as liquidity risk, interest rate risk and often exchange rate risk. Given the NGO and development roots of most MFIs, they are often unfamiliar with these risks and the techniques to manage them. MFIs can utilize expertise and tools from formal financial institutions that are constantly developing and updating their risk management techniques. Banyan Global's methodology for assessing risk for MFIs adapts the tools and methodology used by formal financial institutions in risk management. Banyan Global's risk management framework involves identifying, measuring, limiting and monitoring risks. These risks include financial risks associated with matching interest and exchange rate exposure as well as liquidity and operational risks. The framework involves active asset liability management (ALM), liquidity management and internal audit. It incorporates stress testing as a tool to manage these risks. This process involves making assumptions about stressed scenarios that can affect cash flow and balance sheet performance in order to determine limits and procedures to manage risk. The framework requires an organizational communications strategy that includes an internal audit function and direct involvement by an Asset Liability Committee (ALCO) as well as the MFI's board of directors.<sup>1</sup>



Regulators, raters, and increasingly donors and MFIs themselves are requiring that MFIs pay greater attention to the financial risks that they take. As there is limited industry information available on microfinance risk management, Banyan Global recently conducted research on six MFIs in Asia, Africa, Eastern Europe, Latin America and the Middle East regarding their risk management policies and procedures. The research was conducted from March-July 2005. Interviews and data were collected from: Al-Tadamun (Egypt), Integrated Development Fund (IDF) Bangladesh, Kosovo Enterprise Program, Pro Mujer Peru, Pro Mujer Nicaragua and FINCA Uganda. The intention of this research was to assess the financial risks MFIs are facing and the sophistication of the techniques they employ to address these risks in order to inform Banyan Global's technical assistance efforts and to provide greater depth to the industry discourse on this topic.

Below are some of the major findings from the anecdotal evidence and Banyan Global's own risk management experience:

<sup>1</sup> More information about the Banyan Global's risk management framework is available upon request.

- MFIs affiliated with international networks were generally better aware of the risks they face and were more actively managing these risks.
- MFIs with more rigorous cash flow analyses and liquidity management often have adequate back-up liquidity sources in place and have lower funding costs.
- As MFIs diversify their funding sources, foreign exchange risk can become a significant issue. Particularly since traditional hedging tools like forwards and swaps are often not available or not cost effective in the markets in which they operate.
- As MFIs mature, their interest rate risk tends to increase, which can negatively affect profitability.
- Few MFIs are stress testing their liquidity or the impact interest rate and exchange rate movements have on their businesses.

The purpose of this paper is to share the major findings from Banyan Global's risk management research with the microfinance community, to explain how liquidity, interest rate and exchange rate risk can impact an MFI's business, and to introduce practical tools and techniques which MFIs can use to measure, limit and monitor these risks. The techniques presented in the paper are not comprehensive but rather designed to advance the discussions surrounding microfinance risk management. In addition to the recent research conducted by Banyan Global, this paper also draws on Banyan Global's previous experience as a provider of risk management technical assistance and training to MFIs, and the expertise of Banyan Global's staff and consultants in the private sector.

## II. INTRODUCTION: THE EVOLUTION OF MFIS' TECHNICAL ASSISTANCE NEEDS

Over the past 10 years, microfinance has gained the widespread support of international development organizations world wide as an effective tool for improving the livelihoods of the poor and integrating them into the formal financial sector. As donors have increasingly turned their attention to supporting efforts to provide financial sector integration through microfinance, many of the stronger microfinance institutions (MFIs) have had to shift away from donor financing and support. Pioneer MFIs that began in the late 1980s and early 1990s as well as new institutions that have been able to successfully start up and reach sustainability in a short time have been moving away from donor funding and becoming increasingly commercial. This has been extremely positive for the sector as a whole, serving as a model for best practices and freeing up donor resources to support more nascent MFIs, the development of sound regulatory frameworks and innovation in the field.

As MFIs have made this transition from grants to commercial funding sources, many have outgrown the traditional array of technical assistance services offered by donors and networks, such as start-up assistance, market research, MIS systems, product development expertise, and loan officer training. Mature MFIs require progressively more sophisticated tools in order to overcome their operational and financial challenges. One area becoming increasingly important for MFIs to address is how to manage risk. MFIs must learn to manage not only their credit risk, as has been stressed in recent years, but also the risks related to funding their operations through

ever more diverse sources, such as client deposits and loans from commercial banks and private investors. With such funding come more stringent repayment schedules and higher (if not yet fully commercial) cost-of-funds, exposing an MFI to additional risks such as liquidity risk, interest rate risk and often exchange rate risk. Given the NGO and development roots of most MFIs, they are often unfamiliar with these risks and the techniques to manage them. MFIs can utilize expertise and tools from formal financial institutions that are constantly developing and updating their risk management techniques.

### III. LIQUIDITY MANAGEMENT

***Liquidity: the ability to meet an institution's financial obligations when they are contractually due.***

Liquidity is essential for an MFI's survival and growth. An MFI with sufficient liquidity is able to meet its debt obligations, attract additional funds and investments, grow its loan portfolio and client base, and take advantage of other business opportunities as they arise. Liquidity risk is simply the risk of running out of funds in the short or long term, which can put an MFI out of business either temporarily or permanently.

All MFIs are necessarily exposed to liquidity risk and most are aware of these risks at some level. In the course of Banyan Global's research, MFIs affiliated with international microfinance networks reported to be monitoring and managing this risk better than non-networked MFIs. The most common liquidity risk management tool employed is the use of overdraft lines of credit with local banks, which donors and networks can often help MFIs secure. While overdraft lines of credit are a good way to ensure adequate liquidity during a crisis or cover temporary cash shortages, they tend to be an expensive source of funds with high interest rates and access fees. For example, when Pro Mujer Nicaragua accesses its overdraft line of credit it pays a monthly interest rate of 1.66%, or over 20% annually. Some MFIs also use their networks as a backup source of liquidity, although there is generally only an informal pledge of support from the network rather than a formal arrangement. As a rule, liquidity facilities should be committed where the provider agrees to give liquidity to an MFI in any circumstance. This will often mean that a fee is involved or that legal documentation is drawn up. An MFI who depends on an informal source of liquidity will not be able to rely on this source with the same confidence that it would a formal one.

#### **Useful Liquidity Ratios:**

- *liquid assets to net maturity gap*
- *liquid assets to deposits*
- *loans to deposits*
- *short term assets to short term liabilities*
- *cash as a percentage of total assets*
- *cash and expected cash inflows to expected cash outflows*

In addition to securing backup sources of liquidity, it is important for MFIs to address liquidity more systematically by quantifying, measuring and limiting their liquidity needs on a regular basis by performing maturity gap analyses and stress testing their liquidity – risk management

techniques few MFIs are currently utilizing. By quantifying the gap between the assets and the liabilities that mature in a given period, maturity gap analysis allows an institution to establish when it will have too little or too much liquidity and to manage its asset/liability mix accordingly. Insufficient liquidity can force an MFI to access its expensive backup liquidity sources, temporarily cease to make loans, or in extreme cases, default on its loan payments and close down. Excess liquidity can indicate an institution is too fiscally conservative, which can impede its growth, or that demand for credit is not sufficient to utilize the available funds.

An important tool that should be used to measure and set limits on liquidity risks is stress testing. Stress testing allows an MFI to project funding shortfalls in the case of a run on deposits or the loss of a major creditor. By making some assumptions about scenarios that can stress an MFI's liquidity, the institution can project its maturity gap under stressed conditions. This allows an MFI to project how much it could potentially lose (or gain) in a stressed situation and estimate how many liquid assets to keep on hand. The purpose of stress testing is to *set limits*, by deciding what level of loss an MFI can sustain and allowing an MFI to come up with an action plan for managing treasury operations *in advance*, in case the stress scenario actually occurs. Stress testing is not common practice for MFIs. Of Banyan Global's research sample, no institution currently stress tests its liquidity.

To varying degrees, some MFIs are monitoring liquidity by analyzing their asset and liability maturity gaps, albeit to varying degrees. Only two of the six institutions in Banyan Global's research sample regularly perform asset and liability maturity gap analyses, while others conduct gap analyses either every three months, annually or never. When asked to report their assets and liabilities by tenor buckets, all participants in the research sample placed their loan portfolio in the tenor bucket in which those loans matured. This methodology can overestimate how liquid an institution really is. MFIs are in the business of making loans. If MFIs assume their loan portfolio matures in the short-term and is available to meet the contractual obligations on their liabilities, they will quickly discover they have no funds with which to make new loans.

Thus, when monitoring and measuring liquidity from a business-as-usual perspective, institutions should convert some of their *contractual maturity* assets (the date an individual asset matures in accordance with its contract) into *behavioral maturity* assets (an asset that is considered long-term because in practice the funds are continually rolled-over even if the counterparty changes) in order to recognize that they are less liquid than they appear, as discussed in greater detail in the example below. This is especially important for deposit taking institutions like IDF, which funds 63% of its loan portfolio with deposits.

Once an institution has completed its maturity gap schedule, it can use this schedule to stress test its liquidity and determine what actions it needs to take to prepare itself for a stressed situation. In early 2005, Banyan Global worked with the management and staff at XacBank in Mongolia to develop customized exercises for the bank to stress test its liquidity, such as projecting scenarios of a 10% loss in deposits and a large decline in the availability of funds through the domestic inter-bank market. Since the bank's rapid growth and expansion would not accommodate comfortably a decline in its loan portfolio, the exercise helped the bank to determine the level of

additional back-up liquidity sources that needed to be in place for the business to continue to grow in a stressed situation.

### Example I: Gap Analysis

Table 1 shows the balance sheet of one of the sampled MFIs by tenor bucket as reported by the institution.<sup>2</sup> The loan portfolio is broken down by *contractual maturity*, generally less than 6 months as is common for MFIs. Given the magnitude of these “short-term” assets, the MFI’s liquidity gap for the first three periods (through six months) is positive and its cumulative liquidity gap is positive in all periods, indicating that it is sufficiently liquid to meet its loan repayment obligations and potential demand on deposits in the case of a crisis.<sup>3</sup>

| <b>Table 1: MFI's Self-Reported Balance Sheet (US\$)</b> |                  |                  |                  |                      |                       |                     |                  |
|--|------------------|------------------|------------------|----------------------|-----------------------|---------------------|------------------|
|  | <b>MATURITY</b>  |                  |                  |                      |                       |                     | <b>Total</b>     |
|  | <b>1 month</b>   | <b>3 months</b>  | <b>6 months</b>  | <b>7 - 12 months</b> | <b>13 - 24 months</b> | <b>&gt; 2 years</b> |                  |
| <b>ASSETS</b>  |                  |                  |                  |                      |                       |                     |                  |
| Cash and equivalents                                     | 994,144          | 0                | 0                | 0                    | 0                     | 0                   | 994,144          |
| Short-term loans outstanding                             | 538,349          | 4,788,036        | 904,610          | 184,967              | 75,550                | 0                   | 6,491,512        |
| Loan-loss reserve (negative)                             | 0                | -160,959         | 0                | 0                    | 0                     | 0                   | -160,959         |
| Other short-term assets                                  | 7,968            | 91,850           | 189,527          | 0                    | 0                     | 0                   | 289,345          |
| <b>Total Current Assets</b>                              | <b>1,540,462</b> | <b>4,718,927</b> | <b>1,094,137</b> | <b>184,967</b>       | <b>75,550</b>         | <b>0</b>            | <b>7,614,042</b> |
| Net fixed assets   | 0                | 0                | 0                | 0                    | 188,738               | 440,388             | 629,126          |
| Other long-term assets                                   | 0                | 0                | 0                | 0                    | 0                     | 0                   | 0                |
| <b>Total Non-Current Assets</b>                          | <b>0</b>         | <b>0</b>         | <b>0</b>         | <b>0</b>             | <b>188,738</b>        | <b>440,388</b>      | <b>629,126</b>   |
| <b>TOTAL ASSETS</b>                                      | <b>1,540,462</b> | <b>4,718,927</b> | <b>1,094,137</b> | <b>184,967</b>       | <b>264,288</b>        | <b>440,388</b>      | <b>8,243,169</b> |
| <b>LIABILITIES</b>                                       |                  |                  |                  |                      |                       |                     |                  |
| Guarantee deposits                                       | 309,968          | 1,100,128        | 8,894            | 0                    | 0                     | 0                   | 1,418,990        |
| Short-term loans   | 453,261          | 395,322          | 866,687          | 417,193              | 0                     | 0                   | 2,132,462        |
| Other short-term liabilities                             | 319,873          | 74,646           | 0                | 0                    | 0                     | 0                   | 394,519          |
| <b>Total Current Liabilities</b>                         | <b>1,083,101</b> | <b>1,570,096</b> | <b>875,581</b>   | <b>417,193</b>       | <b>0</b>              | <b>0</b>            | <b>3,945,971</b> |
| Long-term loans payable                                  | 0                | 0                | 0                | 0                    | 1,010,234             | 1,871,345           | 2,881,579        |
| Grants pending application                               | 0                | 0                | 23,030           | 0                    | 0                     | 0                   | 23,030           |
| Other long-term liabilities                              | 0                | 47,028           | 0                | 0                    | 0                     | 0                   | 47,028           |
| <b>Total Non-current Liabilities</b>                     | <b>0</b>         | <b>47,028</b>    | <b>23,030</b>    | <b>0</b>             | <b>1,010,234</b>      | <b>1,871,345</b>    | <b>2,951,637</b> |
| <b>TOTAL LIABILITIES</b>                                 | <b>1,083,101</b> | <b>1,617,124</b> | <b>898,611</b>   | <b>417,193</b>       | <b>1,010,234</b>      | <b>1,871,345</b>    | <b>6,897,608</b> |
| <b>GAP</b>   | <b>457,360</b>   | <b>3,101,803</b> | <b>195,526</b>   | <b>(232,226)</b>     | <b>(745,946)</b>      | <b>(1,430,957)</b>  | <b>1,345,561</b> |
| <b>Cumulative GAP</b>                                    | <b>457,360</b>   | <b>3,559,163</b> | <b>3,754,689</b> | <b>3,522,463</b>     | <b>2,776,517</b>      | <b>1,345,561</b>    |                  |

<sup>2</sup> In some cases, MFIs have preferred to remain anonymous in reporting confidential financial information.

<sup>3</sup> The “liquidity gap” for any tenor represents borrowings from, or placements to, the markets that are required to replace maturing liabilities or assets.

However, in a business-as-usual environment the MFI would not use its maturing loans to pay its liabilities, but would instead continually rollover its loan portfolio. Thus, based on its *behavioral maturity*, the MFIs loan portfolio should be considered a long term asset and placed in the longest tenor bucket, as has been revised for illustrative purposes in Table 2 below<sup>4</sup>.

Likewise not all of the MFI's deposits will necessarily be withdrawn at their contractual maturity date. Deposits that are expected to remain in the institution for some time past their maturity date and are relatively insensitive to changes in interest rates are called "sticky" or "core" deposits and should be assigned the longest tenor bucket. More volatile customer deposits or large one-off deposits should be assigned the shortest tenor bucket. In the adjusted balance sheet in Table 2, it is assumed that 85% of the MFI's deposits are core deposits.<sup>5</sup>

The resulting gap analysis reveals that the MFI must continue to secure additional funding and/or grow its deposit base significantly in order to meet its loan obligations and prevent a disruption in its lending. The analysis is a useful tool for measuring the magnitude of the gap and for determining how much the institution should raise in or before each period. In period 1, it has sufficient liquidity to continue with business as usual. However, in period 2 (the 3 month tenor bucket) it will require between US \$200-400,000 to cover its liabilities (depending on how many of its non-core deposits it retains) and in period 3 it will require an additional US \$700,000. With approximately US \$1.2 million of capacity remaining in its overdraft lines of credit, the MFI currently has sufficient backup liquidity for at least 6 months. As such, it is relatively well prepared to meet these obligations and maintain its current lending operations if unable to secure additional loans. However, given the expense of accessing these credit lines, the value of regularly performing gap analyses is clear, in that the process allows the MFI to *quantify* the funds they need to secure during each period and to *identify* how much back up liquidity they need to have in place at any point in time.

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<sup>4</sup> For MFIs aiming to grow their loan portfolios, this analysis would need to be complemented by an analysis of future cash flows.

<sup>5</sup> This assumption that 85% of the MFI's deposits are core deposits is for illustrative purposes only. Actual core deposits can be estimated in a separate analysis using historical deposit volatility data.

**Table 2: MFI's Adjusted Balance Sheet (US\$)**

|                               | MATURITY         |                  |                    |                    |                    |                  | Total            |
|-------------------------------|------------------|------------------|--------------------|--------------------|--------------------|------------------|------------------|
|                               | 1 month          | 3 months         | 6 months           | 7 - 12 months      | 13 - 24 months     | > 2 years        |                  |
| <b>ASSETS</b>                 |                  |                  |                    |                    |                    |                  |                  |
| Cash and equivalents          | 994,144          | 0                | 0                  | 0                  | 0                  | 0                | 994,144          |
| Short-term loans outstanding  | 0                | 0                | 0                  | 0                  | 0                  | 6,491,512        | 6,491,512        |
| Loan-loss reserve (negative)  | 0                | 0                | 0                  | 0                  | 0                  | -160,959         | -160,959         |
| Other short-term assets       | 7,968            | 91,850           | 189,527            | 0                  | 0                  | 0                | 289,345          |
| Total Current Assets          | 1,002,112        | 91,850           | 189,527            | 0                  | 0                  | 6,330,553        | 7,614,042        |
| Net fixed assets              | 0                | 0                | 0                  | 0                  | 188,738            | 440,388          | 629,126          |
| Other long-term assets        | 0                | 0                | 0                  | 0                  | 0                  | 0                | 0                |
| Total Non-Current Assets      | 0                | 0                | 0                  | 0                  | 188,738            | 440,388          | 629,126          |
| <b>TOTAL ASSETS</b>           | <b>1,002,112</b> | <b>91,850</b>    | <b>189,527</b>     | <b>0</b>           | <b>188,738</b>     | <b>6,770,942</b> | <b>8,243,169</b> |
| <b>LIABILITIES</b>            |                  |                  |                    |                    |                    |                  |                  |
| Guarantee deposits            | 212,849          | 0                | 0                  | 0                  | 0                  | 1,206,142        | 1,418,990        |
| Short-term loans              | 453,261          | 395,322          | 866,687            | 417,193            | 0                  | 0                | 2,132,462        |
| Other short-term liabilities  | 319,873          | 74,646           | 0                  | 0                  | 0                  | 0                | 394,519          |
| Total Current Liabilities     | 985,982          | 469,968          | 866,687            | 417,193            | 0                  | 1,206,142        | 3,945,971        |
| Long-term loans payable       | 0                | 0                | 0                  | 0                  | 1,010,234          | 1,871,345        | 2,881,579        |
| Grants pending application    | 0                | 0                | 23,030             | 0                  | 0                  | 0                | 23,030           |
| Other long-term liabilities   | 0                | 47,028           | 0                  | 0                  | 0                  | 0                | 47,028           |
| Total Non-current Liabilities | 0                | 47,028           | 23,030             | 0                  | 1,010,234          | 1,871,345        | 2,951,637        |
| <b>TOTAL LIABILITIES</b>      | <b>985,982</b>   | <b>516,996</b>   | <b>889,717</b>     | <b>417,193</b>     | <b>1,010,234</b>   | <b>3,077,487</b> | <b>6,897,608</b> |
| <b>GAP</b>                    | <b>16,130</b>    | <b>(425,145)</b> | <b>(700,190)</b>   | <b>(417,193)</b>   | <b>(821,496)</b>   | <b>3,693,455</b> | <b>1,345,561</b> |
| <b>Cumulative GAP</b>         | <b>16,130</b>    | <b>(409,015)</b> | <b>(1,109,206)</b> | <b>(1,526,398)</b> | <b>(2,347,894)</b> | <b>1,345,561</b> |                  |

#### IV. INTEREST RATE RISK MANAGEMENT

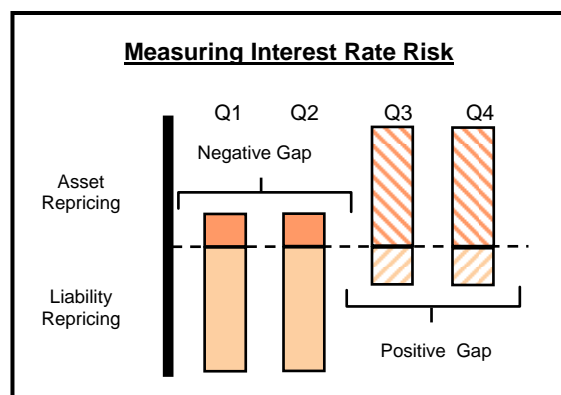
*Interest rate risk: the risk to earnings or liquidity arising from the unexpected movement of interest rates.*

Interest rate management is an important component of asset and liability management. Shifts in interest rates affect the value of an institution's assets and liabilities as the present value of future cash flows changes. An MFI is exposed to interest rate risk when there is a mismatch between the term lengths and the timing of cash flows from an MFI's financial assets, namely its loan portfolio and investments, and financial liabilities, namely its interest bearing deposits and borrowed funds.

When liabilities to be repriced or due to mature in a given period exceed assets to be repriced, an institution is said to have a *negative* gap. If interest rates rise in the period, an institution with a negative gap will experience a decrease in earnings, as the cost of new liabilities exceeds the revenues from existing assets. Conversely, if interest rates fall, the institution will experience an

increase in earnings, as the reduction in the cost of liabilities will exceed the reduction in revenues from existing assets.

When the assets repricing in a given period exceed the liabilities repricing, an institution is said to have a *positive gap*. If interest rates rise in the period, an institution with a positive gap will experience an increase in earnings, as revenues from new assets exceed the cost of existing liabilities, while if interest rates fall, the institution will experience a decrease in earnings. Given most MFIs' client loans are short-term while their borrowings are long-term, most have positive interest rate gaps.



An interest rate risk mismatch table, like that in Table 3 below, can be created by categorizing interest-earning assets and interest-bearing liabilities by the period when each is scheduled to reprice to the prevailing market rate. Unlike in the liquidity risk exercise, there is no need for the MFI to distinguish between contractual and behavioral maturity. The main distinction is between fixed rate assets and liabilities, which maintain the same interest rate through maturity and floating rate assets and liabilities, which are classified according to when the interest rate is reset (repriced), and not the final maturity date. For instance, a loan priced at the six month LIBOR rate (plus some risk premium) will alter its interest rate every six months until the loan matures, and are thus placed in the 6 month maturity column.

| Table 3: Sample Interest Rate Sensitive Maturity Analysis |               |               |               |               |                |               |              |
|---|---------------|---------------|---------------|---------------|----------------|---------------|--------------|
| (000's US\$)  | MATURITY      |               |               |               |                |               | Total        |
|   | 1 month       | 3 months      | 6 months      | 7 - 12 months | 13 - 24 months | > 2 years     |              |
| <b>ASSETS</b>   |               |               |               |               |                |               |              |
| Cash and Investments                                      | 2,000         | 0             | 0             | 0             | 1,000          | 0             | 3,000        |
| Net loan portfolio  | 3,000         | 2,000         | 17,000        | 0             | 3,000          | 0             | 25,000       |
| Total IR Sensitive Assets                                 | 5,000         | 2,000         | 17,000        | 0             | 4,000          | 0             | 28,000       |
| Other assets  | 0             | 500           | 0             | 0             | 500            | 1,000         | 2,000        |
| Total Assets  | 5,000         | 2,500         | 17,000        | 0             | 4,500          | 1,000         | 30,000       |
| <b>LIABILITIES</b>  |               |               |               |               |                |               |              |
| Interest bearing deposits                                 | 10,000        | 0             | 0             | 3,000         | 1,000          | 0             | 14,000       |
| Fixed rate commercial loans                               | 0             | 0             | 1,000         | 0             | 1,800          | 3,000         | 5,800        |
| Floating rate commercial loans                            | 0             | 1,000         | 2,000         | 0             | 0              | 0             | 3,000        |
| Total IR Sensitive Liabilities                            | 10,000        | 1,000         | 3,000         | 3,000         | 2,800          | 3,000         | 22,800       |
| Soft Loans from Donors                                    | 0             | 0             | 0             | 0             | 1,000          | 2,000         | 3,000        |
| Accounts Payable  | 500           | 200           | 0             | 0             | 0              | 0             | 700          |
| Total Liabilities   | 10,500        | 1,200         | 3,000         | 3,000         | 3,800          | 5,000         | 26,500       |
| IR Sensitive Assets/ IR Sensitive Liabilities             | 0.50          | 2.00          | 5.67          | 0.00          | 1.43           | 0.00          | 1.23         |
| <b>Net GAP</b>  | <b>-5,000</b> | <b>1,000</b>  | <b>14,000</b> | <b>-3,000</b> | <b>1,200</b>   | <b>-3,000</b> | <b>5,200</b> |
| <b>Cumulative GAP</b>                                     | <b>-5,000</b> | <b>-4,000</b> | <b>10,000</b> | <b>7,000</b>  | <b>8,200</b>   | <b>5,200</b>  |              |

Of the institutions in Banyan Global's research sample only two were actively monitoring and managing their interest rate exposure. One MFI targets its Interest Rate Sensitive Assets to Interest Rate Sensitive Liabilities ratio to be 100% and negotiates floating interest rates for some of its borrowings. Pro Mujer Nicaragua is in an interesting position because the interest rates it charges its clients are dictated by the Central Bank monthly and are linked to the fixed exchange rate regime, a crawling peg to the US Dollar. Additionally, it does not take deposits. As a result, Pro Mujer Nicaragua reprices its loans monthly, although the interest rate it charges its clients is fixed on the date of disbursement. To compensate for the rigidity of its loan portfolio, it negotiates the terms and interest rates of its foreign borrowings to match those of its assets.

From a liquidity standpoint, such strategies are probably sufficient for most MFIs in an environment of rising interest rates because the nature of their business protects them from institution-crippling interest rate risk. The typical 3-6 month maturities of microfinance loans are an effective hedge against sudden increases in interest rates because the loan portfolio can quickly be repriced upwards, assuming competitive pressure allows. MFIs can even profit from an increase in interest rates if their liabilities are long term and fixed rate because they will be able to charge a higher interest rate on client loans while maintaining the lower interest rate on their borrowings. On the other hand, a decrease in interest rates can negatively affect an MFI if it is forced to reprice its loan portfolio downward and is unable to negotiate or refinance the terms of its borrowings.

As MFIs mature and expand their product offerings, their interest rate risk increases. For example, IDF, which has been operating in Bangladesh for over 13 years, offers products with loan terms ranging from 6 months for seasonal agriculture loans to 8 years for housing loans. With an average loan term of 15 months, IDF cannot rely on repricing its loan portfolio if interest rates change. Currently, IDF counts on Bangladesh's inflation rate remaining stable at 5%, but it could benefit from utilizing formal tools to help measure and limit its interest rate risk, such as gap analysis, stress testing and available hedging instruments.

Moreover, all MFIs can use these tools to maximize their profitability. Stress testing interest rate gaps is an important tool that MFIs can use to maximize profitability and reduce risk by finding appropriate combinations of fixed and floating rate assets and liabilities with appropriate terms.

## V. FOREIGN EXCHANGE RISK MANAGEMENT

***Foreign exchange risk: the risk to earnings and liquidity due to a change in the relative value of the currency in which an MFI's assets or liabilities are denominated.***

With the progressive commercialization of the microfinance industry, foreign exchange management has become increasingly important as local sources of commercial funds are limited or unavailable to MFIs. Most international investors and donors have chosen to maintain their investments and loans in hard currencies, rather than the local currencies of MFIs. However,

developing country MFIs operate in environments where at best, local currencies can depreciate at a steady rate, and oftentimes can do so quite sharply and unpredictably. In order to manage this exchange rate risk, MFIs and their networks have tried to avoid passing this risk on to their clients by developing creative ways to help limit and/or hedge their foreign currency exposure, such as through the use of back-to-back hard currency/local currency loans with an international financial intermediary; domestic currency guarantees to access commercial financing from local banks; and hedging options such as forwards and swaps.

Of the institutions in Banyan Global's research sample, most had or expected to have foreign currency exposure in the near future and half of the institutions demonstrated they had thought about how to hedge this risk. However, only one institution is currently hedging its foreign exchange risk in its entirety, Pro Mujer Peru, which uses non-deliverable forwards to hedge its FX risk (see Example II below). One MFI in Banyan Global's research sample has a formal foreign exchange risk management policy to match its hard currency denominated liabilities to its hard currency assets and to limit its overall foreign currency exposure to 10% of core capital. However, given its client loans are all denominated in the local currency, the former is difficult to do without employing some of the other hedging instruments mentioned above or keeping all reserves and investments in hard currency accounts. Another example of an MFI that is accessing the foreign exchange markets outside of Banyan Global's research group is Cali Women's World Banking's use of one-year Colombian Peso forwards to hedge its dollar exposure from a securitized loan through Blue Orchard.

#### **Market Access to NDFs**

- *While NDFs are not available in all markets, they offer MFIs a relatively affordable way to limit their foreign currency exposure.*
- *NDFs are generally available for maturities of up to 5 years.*
- *NDFs are readily available from local banks for the following currencies: Argentine peso, Chinese yuan, Brazilian real, Indonesian rupee, Colombian peso, Philippine peso, Korean won, Chilean peso, Malaysian ringgit, Peruvian sol and Taiwanese dollar.*

### **Example II: Non-Deliverable Forward Contracts**

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In many of the countries in which MFIs operate, traditional foreign currency hedging instruments such as forward contracts are available because the country uses a non-convertible, thinly traded or highly volatile currency. In such instances, non-deliverable forward contracts ("NDFs") can offer MFIs an efficient way to hedge their US dollar denominated liabilities and minimize their exposure to exchange rate risk. Just as in a traditional forward, in a NDF the MFI and the counter-party agree upon a future exchange rate. However rather than exchanging currencies at the end of the contract as in a traditional forward, at maturity the MFI receives or pays the difference between the prevailing market (spot) exchange rate and the previously agreed upon (contract) exchange rate.

Pro Mujer Peru (“PMP”) has pioneered the use of NDFs in Latin America for the microfinance industry. PMP first started taking US dollar denominated loans from the Pro Mujer International (“PMI”) loan fund after outgrowing its start-up grants. Initially, PMP kept the bulk of its excess cash and investments in US dollar accounts as a “hedge” for its US dollar exposure. However, as the institution continued to grow, its US dollar exposure also grew. PMP attracted increasing US Dollar loans from socially responsible investors and religious organizations as well and its dollar denominated liabilities quickly surpassed its dollar denominated assets. Recognizing the risk that this currency mismatch posed, the PMI Board insisted that PMP set up a reserve against its equity account to help absorb any losses resulting from an unexpected devaluation of the Peruvian sol. However, while this reserve provided PMP with a cushion in case of a crisis, it did not limit its potential losses.

In December 2003, with more than \$800,000 in US dollar loans, or approximately 90% of PMP’s total liabilities, PMP decided to hedge its foreign currency exposure by entering into two 6 month NDF contracts with Banco Continental: one for US\$603,500 with a contract exchange rate of 3.5151 PEN/US\$ and one for US\$200,000 with a rate of 3.5114 PEN/US\$. Given the spot-rate at this time was approximately 3.48 PEN/US\$, the total cost associated with the NDFs, or the increase in PMP’s cost-of-funds, was only an annualized 2.0% and 1.8% respectively.<sup>6</sup> This was far cheaper than converting the US\$ loans into Peruvian sol loans with either a standby letter of credit or guarantee loan, which would have raised PMP’s cost-of-funds to 20% (some 18% higher than through the NDF), and more feasible than converting PMP’s loan portfolio into dollars, which transfers the exchange rate risk to its clients.

If at maturity, the market exchange rate had exceeded the contract rate of the NDFs, Banco Continental would have been obliged to pay PMP the difference between the prevailing market exchange rate and contract rate. PMP could then use this money to pay its US dollar denominated obligations, which would have become more expensive. If on the other hand, the prevailing market exchange rate at maturity was less than the contract rate, PMP would pay Banco Continental the difference, but this loss would be offset by its relatively cheaper loan obligations.

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<sup>6</sup> The cost of a NDF can be calculated by taking the difference between the spot exchange rate at the time the parties enter into the contract and the contract exchange rate, divided by the current spot exchange rate. Here the result is multiplied by 2 to reflect the annual cost of the 6 month NDFs.

### Calculating the Cost of a NDF

**Given:**

US\$ Amount: 603,500

Local Currency Amount: 2,100,180 PEN

Spot exchange rate: 3.48

Forward exchange rate or Contract Rate: 3.5151

**Scenario 1: Sol depreciates to 3.6 PEN/US\$**

PMP's US\$ loans become more expensive:

$$(2,100,180/3.6) - (2,100,180/3.48) = - \text{US}\$20,117$$

Banco Continental pays PMP:

$$(2,100,180/3.5151) - (2,100,180/3.6) = \text{US}\$597,474 - \text{US}\$583,383 = \text{US}\$14,090$$

Total cost to PMP:

$$(-\text{US}\$20,117 + \text{US}\$14,090) = \text{US}\$6,026$$

**Scenario 2: Sol appreciates to 3.4 PEN/US\$**

PMP's US\$ loans become less expensive:

$$(2,100,180/3.4) - (2,100,180/3.48) = +\text{US}\$14,200$$

PMP pays Banco Continental:

$$(2,100,180/3.5151) - (2,100,180/3.4) = \text{US}\$597,474 - \text{US}\$617,700 = \text{US}\$20,226$$

Total cost to PMP:

$$(+\text{US}\$14,200 - \text{US}\$20,226) = - \text{US}\$6,026$$

Recently, Pro Mujer was faced with the question of whether to renew these NDFs. Although the Peruvian Sol has been relatively stable and even appreciating against the US dollar, PMP would be advised to renew their NDFs. The purpose of a risk management strategy is not to take long term speculative positions, despite the obvious temptation to do so, but to reduce the risk associated with exchange rate volatility. A foreign exchange hedge eliminates open positions (exposure to either US dollars or soles) that would expose the MFI to potential foreign currency losses or potential gains. MFIs are neither in the business to take open positions and do not have the technical expertise do so.

## VI. CONCLUSION

As MFIs mature, they will be faced with greater financial, operational and market risks. Some risk is necessary for an MFI to grow and all risks cannot be completely avoided. MFIs must nevertheless begin to manage these risks more systematically. This involves not simply identifying internal and external risks, but quantifying and limiting these risks, stress testing the

effects of disruptions in funding and interest rate and exchange rate movements on their liquidity and earnings, and developing contingency plans for adverse situations.

Appropriate risk management policies and procedures not only ensure an MFI's financial stability, they also enhance a MFI's profitability allowing it to more efficiently serve its clients and achieve scale. To date, most MFIs have not developed adequate risk management policies and procedures, although a number of more mature MFIs in the industry have begun to look into this area and have set up ALCOs charged with this task. Boards of directors must also be involved and can play an important role in supervising risk management activities as well as internal audits.

Regulators, donors, investors and networks all have a vested interest in seeing that MFIs receive the risk management training they need to adequately identify, measure, limit and monitor their risks. In some cases, MFI networks already encourage a more proactive assessment of risk. In Banyan Global's research sample, the MFIs affiliated with international networks, such as Pro Mujer and FINCA, were generally better aware of the financial risks they face and were more actively managing these risks. For the Pro Mujer affiliates this was largely a result of the stringent reporting policies required by Pro Mujer International. For a small network, this centralized risk management structure may work in the short-term, but for larger networks the long-term goal should be to train the in-country management team to develop and conduct their own risk management strategy.

In other cases, particularly when MFIs transform into formal financial institutions, regulators demand more stringent risk management procedures and will often require MFIs to report not only on their risks but on their procedures as well. This has occurred in Mongolia, for example, where the Central Bank has asked formal MFIs to report on their risk management policies, and more recently in Uganda, as more MFIs are transforming from NGOs to regulated non-bank financial institutions. Looking forward to the implementation of the Basel II standards, regulators will be increasingly focused on ensuring that their financial sectors comply with international standards of risk.

Technical assistance providers need to be aware of the changing needs of MFIs as the sector matures. Commercial MFIs will look to apply many of the lessons and practices employed by formal financial institutions and regulators to their own institutions. To do this effectively, the lessons must be tailored to the realities of MFIs, which continue to have relatively simple balance sheets, and limited resources to implement new policies. Burdening an MFI with a

**An MFI's Risk is its Investor's Risk**

*Many private investment funds have recognized the need for capacity building on risk management in the sector and offer technical assistance services to MFIs in conjunction with their investments (UNITUS, SIDI, ING Oiko, ShoreCap, and Blue Orchard).*

*For example, because Blue Orchard only makes US dollar loans to its partners, if necessary it also helps them hedge their dollar exposure as part of the investment process. Some networks have also recognized this need and found innovative ways to help their affiliates manage their risks and reduce their own exposure in the process.*

complex risk management reporting system and structure may be counter productive in that it may not be applicable to the areas of risk specific to the MFI. Nevertheless developing simple exercises using the data already available to a MFIs and delineating risk policies and procedures within their ALCOs can go a long way to ensure MFIs are better prepared to address the growing complexities of the sector.