Resilience of Microfinance to National Macroeconomic Events: A look at MFI asset quality

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This article uses econometric analysis to explore current issues in microfinance and further exploit the wealth of data in MIX's database. It presents summary findings of regression analysis, highlights research questions and areas for further exploration, and invites reaction. Readers are encouraged to contact the author with feedback on the analytical model or examples of cases that may or may not fit its findings. Researchers can find a full econometric discussion of this research and preliminary results online at: www.themix.org.

Recent developments in the financing of microfinance have focused on the underlying microfinance portfolio. In the case of the BRAC securitization described in detail in this issue of the MicroBanking Bulletin, this can mean the packaging and selling of securities based on the microloan portfolio and its repayment performance. In other instances, service company models delink the MFI from the portfolio by having the MFI manage funds on behalf of another financial institution, like Ameen in Lebanon or Sogesol in Haiti. Banks entering microfinance, like ICICI Bank in India, have used portfolio buy-outs to gain market share, while leaving the microfinance institution to manage collection and recovery.

All these transactions rely on managing the risk implicit in the microcredit portfolio, while explicitly attempting to eliminate or reduce institutional credit risk. Investors and analysts are left to judge portfolio risk, including its resilience to crises, economic downturns and other shocks that might disrupt the economic activity of the microborrower and reduce her ability to repay her loan.

Conventional wisdom and case studies[1] have long pointed to the resilience of microfinance to macroeconomic shocks. To date, however, global studies analyzing these dynamics among large number of MFIs and countries have yet to appear[2].

In an attempt to fill this gap, the author scoured MIX's global MFI data set in search of quantitative evidence of impact of macroeconomic shocks on the quality of microfinance loan portfolios. Using regression analysis techniques we control for those observable variables that may have an impact on the quality of the portfolio such as the size of an institution, its years of experience as a microcredit provider, its clients' average loan balance, key factors in its cost structure, staff productivity and salaries, and lending methodology. In the country context, we look at inflation, commercial lending interest rate, the relative pool of financial assets in the economy, and changes in GNI per capita The following analysis shows that after controlling for MFI and country characteristics, we find no evidence suggesting a strong relationship between changes in GNI per capita (GROWTH) and four indicators of MFI portfolio risk: Portfolio at Risk over 30 Days (PAR 30), Portfolio at Risk over 90 Days (PAR 90), Loan loss Rate (LLR), and Write-off Ratio (WOR). The results suggest that microfinance portfolios have high resilience to economic shocks.

The sample used for this analysis draws on 811 MFIs in 88 countries reporting data to the Microfinance Information Exchange, Inc. (MIX), mainly in the period 1999–2005, with eight MFIs reporting as early as 1996.

[1] McGuire, Paul B., *The Asian Financial Crisis — Some Implications for Microfinance*, The MicroBanking Bulletin, No. 2, July 1998, pp. 9–12; Xavier Reille and Dominique Gallmann, *Impacts of the Asian Financial Crisis on Indonesia's People's Credit Banks*, Journal of the Asian and Pacific Development Centre, 2002.; Thierry Benoit Calderón, *Micro-bubble or Macro-immunity? Risk and Return in Microfinance: Lessons from Recent Crisis in Latin America*, in: *Microfinance Investment Funds. Leveraging Private Capital for Economic Growth and Poverty Reduction*, edited by Matthaus-Maiwer and J.D. von Pischke, 2006. Adrian Gonzalez and Claudio Gonzalez-Vega, *Sobreendeudamiento en las Microfinanzas Bolivianas, 1997–2001*, Rural Finance Program, The Ohio State University, 2003.

[2] Krauss, Nicolas and Ingo Walter, *Can Microfinance Reduce Portfolio Volatility?*, 2006, is an exception.

All told these MFIs represent 36 million borrowers with US$13.6 billion in loan portfolio.

Low correlation with growth rate of GNI per capita

Economic growth and portfolio risk across the sample do not move in lock step. Correlation between asset quality — either risk or default — and economic shock range from -7% to -4% for a sample of between 1,431 and 2,412 observations depending on the specific risk variable, as shown in **table 1**. The correlation coefficients for the 10 countries with the largest sub samples are also shown in the table.

As the data demonstrate, there is no consistent pattern on the sign or magnitude of the relationships, ranging from negative 64% to positive 20%. Portfolio risk does not track with changes in underlying economic conditions in the country.

The very low magnitude of the overall correlation coefficients and the inconsistent pattern of results for the countries highlighted in **table 1** are not enough to argue for the resilience of MFIs to macroeconomic shocks. For more robust conclusions, we use regression analysis to evaluate the effect of different factors on this relationship:

- To assess if different loan sizes have an impact on portfolio quality, we explore the impact of loan size on the relationship between economic crises and portfolio risk. In addition, we explore whether the impact of changes in GNI per capita depends on the relative sizes of loans disbursed.
- To explore the possibility of a time delay between the onset of a crisis and its impact on portfolio risk, we estimate the same model twice, using current and prior year's change in GNI per capita.
- As higher interest rates on loans may increase risk of default, we use yields in our analysis to control for higher risk associated with higher interest rates.
- While actual portfolio monitoring cannot be measured, productivity is analyzed as a proxy for monitoring. Similarly, average salaries are used to account for the level and quality of human resources deployed in originating loans and monitoring for default.
- Finally, various macroeconomic variables, such as changes in price levels and depth of the financial system are analyzed to account for differences between countries.

Microloans resilient to macroeconomic changes

Our model shows no relationship between changes in GNI per capita and asset quality. Specifically, regression results show no statistically significant relationship with PAR 90 and LLR. In all analyses for these two variables, the coefficients associated with GROWTH were not statistically significant, even when estimating different impacts according to relative loan size. For PAR 30 and WOR, one significant relationship was found; however, the magnitude of the impact is very small. We also isolated and examined the relationship between measures of risk and negative growth (economic downturns and crises), excluding positive growth (economic upswings or booms). In this analysis, correlations for measures of risk, including PAR 30

Table 1 Correlation of MFI portfolio risk with growth rate of GNI per capita: 1999–2005

	All 88 countries	Bosnia and Herze-govina	Bangladesh	Bolivia	Colombia	Ecuador	India	Indonesia	Nicaragua	Peru	Philippines
PAR 30	-6%	16%	7%	-39%	-2%	14%	-17%	5%	-9%	-14%	-1%
	2,412	70	115	85	73	105	112	57	77	145	128
PAR 90	-5%	13%	-22%	-31%	-7%	-4%	-26%	9%	-14%	0%	5%
	1,431	64	29	70	56	47	62	43	55	102	98
LLR	-4%	-10%	14%	4%	-33%	-2%	-4%	-64%	-18%	14%	12%
	1,432	64	29	70	56	47	62	43	55	102	98
WOR	-7%	-5%	8%	-3%	-12%	10%	-5%	-7%	-19%	20%	18%
	2,281	70	105	82	65	103	112	57	77	134	124

and PAR 90, increased, but those for measures of loss did not. In short, economic crises showed up in increased delinquency, but not in eventual default. Assets were stressed, but not unrecoverable.

Overall, analysis shows that other unobserved variables are more important in explaining changes in portfolio risk. This result is not surprising. Industry analysts have long argued that the most important factors determining the risk in an MFI's portfolio are related to their management and human resources, quality of MIS, governance, credit policies, mission and commitment to sustainability. Similarly, other factors such as poor market infrastructure (e.g. lack of roads or remoteness) or other factors affecting the client population (e.g. long term poor health conditions due poor sanitary conditions or widespread chronic illness like HIV/AIDS) may impact repayment. These are all very important factors but ones for which no consistent, reliable data exist on a significant scale. With the exception of commitment to sustainability, none of these are specifically incorporated into the current analysis.

What have we learned?

Data available for modeling the risk of MFI portfolios are limited. Despite the breadth of data available through MIX data sets, the explanatory power of existing variables is limited. The data themselves also pose challenges. Little variability in portfolio risk and loss exists among MFIs reporting to MIX. On one end, an MFI never improves risk or loss beyond zero percent. On the other end, MFIs that report data to MIX are more transparent, have basic reporting systems to capture and report on key financial and operational statistics, and are hence more likely to use and act upon the information to prevent crises, including repayment crises, within their institutions. As a result, where there exists a notional maximum risk or loss of 100%, reported results lie mostly in a tight range between zero and three percent.

The analysis still holds important lessons for investors looking to bundle and sell securities backed by microloan portfolios or buy the microloan portfolios themselves. Evidence to date would indicate that the quality of such assets stands up to economic downturns. Our model finds nothing significant to suggest otherwise. However, given the importance of other factors such as management and governance, business processes, and product design and the likelihood that they influence portfolio risk, this analysis suggests that the quality of the originator of those loans matters even more than the downturns in the economic environment in which the microborrowers operate. Even when buying microloan portfolios, choosing the right partner MFI is still the best guarantee of success.