Does Microfinance Form a Distinctive Asset Class?
Preliminary Evidence

Nicolas Krauss[a] and Ingo Walter[b]

[a]*Department of Politics, New York University, New York, NY10012, USA*

[b]*Stern School of Business, New York University, New York, NY10012, USA*

This version: 5 November 2006

Abstract

Microfinance is arguably one of the most effective techniques for poverty alleviation in developing countries. Although traditionally supported by nongovernmental organizations and socially-oriented investors, microfinance has increasingly demonstrated its value on a stand-alone basis, typically exhibiting low default rates combined with attractive returns, encouraging greater commercial involvement. This paper addresses a related issue – whether microfinance represents a distinct financial asset class, thereby forming the basis for access to global capital markets and performance-driven investors in their search for efficient portfolios. Our empirical tests generally show very low correlations between the performance of microfinance institutions and global and national market performance measures, suggesting that microfinance portfolios may constitute a distinct asset class that can have useful portfolio diversification value.

_____

Microfinance, traditionally supported by aid agencies and non-profit entities, has become a key tool in the alleviation of poverty in developing countries. In recent years, broader sources of funding have been tapped for microfinance, including client deposits of bank-related micro-lenders, refinancings via interbank deposits and commercial loans, and tapping the capital markets, the latter in the form of securitized portfolios of microloans that are marketed to institutional and private investors. Apart from any social benefit, the argument for commercialization of microfinance is that the default risk – comprising the likelihood of default, the loss given default (LGD), and expected recoveries (ER) – tends to be low relative to the returns, and that the risk-adjusted total returns on microfinance exhibit low correlations to those of other asset classes, therefore presenting investors with an attractive opportunity for portfolio diversification.

This paper focuses only on the latter issue, and examines empirically whether or not microfinance displays low correlations with global and local market movements. Part 1 considers the institutional transformation of microfinance from donor-driven non-governmental organizations (NGOs) towards market-based financial institutions – requiring adaptation of financing to commercial terms while at the same time avoiding mission-drift away from the goal of poverty-alleviation. Part 2 presents an empirical analysis of the systemic risk of microfinance institutions (MFIs) using emerging market commercial banks operating in the same national environments as a benchmark and correlating MFI returns against the S&P 500, MSCI Global and MSCI Emerging Markets indexes as proxies for global market risk and against domestic GDP as a proxy for domestic market risk. Since available data do not yet permit stress-testing our empirical results, we examine in Part 3 case-study evidence on the performance of MFIs in times of severe financial and macroeconomic distress. Part 4 provides a rationale for the empirical results obtained and suggests how these findings may change as the microfinance industry matures. Part 5 presents our conclusions.

1. Evolution of Microfinance

Approximately 10,000 MFIs have evolved worldwide over some three decades – in an amalgam of non-governmental organizations (NGOs), commercial banking entities, credit unions, cooperatives and finance companies – serving some 40 million clients worldwide.

Total market demand for microfinance in 2005 was estimated at some $150 to $250 billion, as against total supply of just $10 to $15 billion.[1] Scarce donor funding has been a key factor in limiting growth. Consequently, many MFIs have transformed themselves from mission-driven, often inefficient NGOs to regulated financial institutions partially or entirely funded by private capital. Apart from encouraging coherent reporting standards, credit ratings and viable industry associations, regulation brought new financing strategies to MFIs, including deposit-taking and the issuance of domestic and international securities.

Deposits are generally the cheapest and most stable form of financing for MFIs that have acquired banking licenses,[2] although the local savings pool is often insufficient to meet funding requirements. Enabling MFIs to additionally access capital markets allows them to finance growth on a larger scale. The longer maturity of capital market financing also strengthens the financial structure of MFIs, and may render them less vulnerable to external factors such as currency devaluations, bank runs and macroeconomic crises.[3] Moreover, capital markets can significantly increase the efficiency of financial intermediation, and thus further decrease the financing costs of MFIs.[4]

Since registering as a financial institution means adhering to more rigorous liquidity, capital adequacy and reporting standards, it does not make

---

1 Gil Crawford of MicroVest at March 20, 2006 Google Seminar "Microfinance Funds Make A Return: Investing for Social Impact"
[2] As of December 2003, the average cost of funds for deposit-taking MFIs was only 6.7%, compared to 10.1% for the others [von Stauffenberg, 2004]
[3] Issuing bonds not only diversifies, but also increases the average maturity of debt. Fundación Women's World Banking (WWB), a non-governmental MFI in Colombia, reports that after it starting issuing bonds, the average maturity of its liabilities increased from 2.2 to 3.2 years [Accion, 2006]
[4]For example, Fundación WWB reported that its average financing costs decreased after the issuance of bonds by 360 basis points. [Accion, 2006]

sense for all MFIs. This is especially true for institutions located in regions where operating costs are high and the local savings are minimal, or where governments set caps on lending rates for regulated financial entities.

A number of MFIs have taken advantage of capital markets as an attractive alternative form of financing. The first institution was Compartamos in Mexico, which undertook a $68 million local-currency microfinance bond issue in 2002. The first international microfinance security, a $40 million securitization of cross-border loans to nine MFIs in Latin America, Eastern Europe and Southeast Asia, was structured by Developing World Markets in 2004. As of mid-2005, approximately $617 million had been raised through domestic and international microfinance capital market transactions. [Credit Suisse, 2005]

What makes microfinance compelling from a commercial perspective are very low default rates, which for MFIs tend to fall between 1% and 3%[5] [Easton, 2005]. Worldwide, the leading MFIs are nearly twice as profitable as the leading commercial banks in their local environments [Littlefield and Holtman, 2005]. MFI transaction costs are much higher than in traditional commercial banking, but the high marginal productivity of capital expenditures undertaken by microfinance borrowers enable transaction costs to be reflected in the form of materially higher interest rates. Survey-based studies conducted in India, Kenya and the Philippines found that the average annual return on investments by microbusinesses ranged between 117 and 847 percent [Consultative Group to Assist the Poor, 2002]. Experience in various developing countries generally suggests that microcredit recipients are capable of paying interest rates that allow MFIs to more than cover their costs. [Consultative Group to Assist the Poor, 2004]

Despite such evidence – together with significant progress by MFIs in terms of improved operating efficiency, establishment of industry standards, and the beginnings of capital market access – microfinance is not yet able to compete with other asset classes on a large scale. Investors appear to perceive

---

[5] However, these values suffer from "survivorship bias." The median value for the 283 MFIs used in the sample is 2.4%

microfinance as excessively risky relative to the returns it generates, partially due to a lack of available or reasonably-priced foreign exchange hedges, absence of a solid track record, poor reporting standards, heterogeneous products and inadequate liquidity. This is also true for dedicated microfinance funds, which generally invest in private and illiquid institutions, and are therefore unable to report pricing on a daily basis. Such problems generally disqualify microfinance as an investible asset class for most mutual funds and other institutional investors.[6]

2. The Risk Profile of Microfinance Institutions

No empirical studies investigating the systemic risk of microfinance have been conducted to date. Presumably due to data constraints, the only comparison of microfinance with capital market movements is contained in a study by Credit Suisse [2005], which estimates the net asset value (NAV) of 49 MFIs as a function of scheduled interest payments. However, it fails to investigate the relationship of MFIs to broader market movements or to estimate cumulative abnormal returns (CARs). Several academic papers have however analyzed the performance of MFIs during times of macroeconomic crises.[7]

The standard approach to analyzing the correlation of an asset class with the market is to calculate the *historical market beta* – i.e. to regress the returns of an asset class over a certain period of time against the returns of a benchmark index. This approach is only possible for publicly traded financial instruments capable of being marked-to-market and generating a dataset with a sufficiently large number of observations. MFIs are virtually all private companies with no mark-to-market valuation, so it is not possible to obtain betas from historical securities prices.

A second approach is estimation of a *fundamental beta* – analyzing the types of businesses in which a firm operates, identifying publicly traded firms in

---

[6] However, some of the more sophisticated funds actually have created pricing models which are in line with SEC regulations.
[7] Section 3 contains a literature review.

those businesses, and obtaining their regression betas as a proxy.[8] This is likewise impossible in the case of MFIs, since microfinance is an emerging asset class with no comparable listed peer group.

The only feasible approach in the case of microfinance institutions relies on accounting earnings: Changes in earnings of a firm, on a quarterly or annual basis that can be related to changes in earnings of the market over a comparable period to arrive at an estimate of the *accounting beta*. This approach nevertheless suffers from biases due to earnings-smoothing by firms, and can be influenced by non-operating factors such as changes in depreciation or inventory valuation, and by the allocation of corporate expenses at the divisional level. Such issues can be addressed by using the net operating income (NOI) instead of earnings, since NOI tends to reflect more accurately the performance of an institution over a given time period. Many MFIs, however, continue to receive grants and subsidized funding from various sources, which dilutes their net operating income.[9] Moreover, in times of financial distress donors are likely to step in to rescue an MFI, which can be compared to too-big-to-fail (TBTF) support of commercial banks.[10]

A further problem is that annual data on MFIs is only available from 1998 to 2004. Given the small number of company-specific observations (a maximum of 7), the resulting regressions will show low R^2 values and high standard errors. Even if the R^2 values for both commercial banks and MFIs suggest lower systemic risk than actually exists, it should be possible to derive meaningful conclusions regarding the relative market risk of MFIs if commercial banks are used as a benchmark.

Since results of the aforementioned regressions will raise significant issues due to general problems associated with accounting betas and additional

---

[8] The beta of two assets put together is a weighted average of the individual asset betas, with the weights based on market values. Consequently, the beta for a firm is the weighted average of the betas of all the different businesses in which it is engaged.

[9] Although the level of subsidization measured as a percentage of the MFIs total assets is likely to be less than 5% on average for the sample group.

[10] [TBTF] is a term used to describe that large financial institutions are likely to be bailed out by national supervisory institutions in times of severe financial distress, given that their collapse could endanger the stability of the financial system.

caveats regarding data constraints, we further examine changes in five key variables: (1) return on equity and (2) profit margin - which we use as profitability indicators; (3) change in total assets and (4) change in gross loan portfolio - which indicate changes in the value of bank assets; and (5) loan portfolio at risk – i.e., over 30 days past-due – denoted here as PAR30, as an indicator of asset quality.

These variables are assumed to capture key changes in the fundamental value of a financial institution, which ultimately defines its market value. If it can be shown that some of the key parameters are significantly more exposed to market movements for commercial banks than they are for MFIs, this would indicate that the latter are generally less exposed to systemic risk:[11]

We test for profitability and asset growth, but cannot directly test for asset quality because comparable data for commercial banks are not available. We rely instead on several case-studies relating to MFI and commercial bank performance during macroeconomic crises. Jansson and Taborga [2000] note that three additional issues are fundamental for MFIs – liquidity, capital, and efficiency and productivity. They should not, however, affect the results of the analysis.[12]

Selection of Variables

We focus on key performance indicators with available comparable data for commercial banks, which we use as a benchmark for calibrating MFI risk.

---

[11] Note that we are using for H_1 of hypotheses 1.1 to 1.3 < instead of ≠ for illustrative purposes. The correct notation would be ≠. As we are conducting a two-tailed test, a result displaying significantly higher correlation for CBs implies ≠ *as well as* <.
[12] Since loans represent a very large percentage of MFI assets (the loan portfolio to total assets ratio is 78% in the sample) with very short average maturity, *liquidity* should not be a major concern regarding fundamental stability of MFIs as long as the portfolio quality does not deteriorate dramatically. Capital is an important measure, but since virtually all systemic changes in this category should be captured by changes in net operating income and PAR30, a lack of sufficient data in this category should not be a major concern. Finally, efficiency and productivity should not be heavily exposed to market impacts, as long as PAR30 remains within acceptable limits.

Portfolio at risk is included due to its significance in commercial banking.[13] Return on assets (ROA) is excluded since this ratio is used to derive the net operating income of MFIs.

Apart from exploring the relationship with the S&P 500 and Morgan Stanley Capital International (MSCI) world equity indexes index as proxies for global markets, we further analyze correlations with the MSCI Emerging Markets equity index and domestic GDP, respectively. Although country risk is partially diversifiable, domestic market risk should be a good indicator of the exposure to contagion risk. Saunders and Walter [2002] find that there is an increasingly predictable relationship among local and global factors, on the one-hand, and emerging market equity returns on the other. Emerging market crises in the 1990s suggest that contagion risk is a key concern for international investors. All else equal, a country-diversified portfolio consisting of assets that show a higher correlation with the domestic economy will show higher leptokurtosis ("fat tails") in the return distribution than the same portfolio with less domestic exposure.[14] If it can be demonstrated that microfinance (apart from low correlations with the major market indexes) evidences low correlations with the domestic market, this would indicate that microfinance is less exposed to the risk of contagion.

Dataset

Data on the S&P 500, MSCI world equities and MSCI emerging market equities indexes were obtained from Bloomberg. Data on domestic GDP was obtained from the Economist Intelligence Unit. Data on MFIs was gathered from the MixMarket database covering the time period 1998-2004. [15] Although this database contains 621 MFIs, we include only data from the 283 MFIs with

---

[13] The only data regarding portfolio quality of commercial banks available was on realized loan losses. This is a significantly different measure of asset quality which is highly influenced by accounting techniques.

[14] Leptokurtosis is detrimental to investors in that it is evidence that events that cause extremely negative returns ("perfect storms") are more likely to appear than in a portfolio with normally distributed returns.

[15] MixMarket™ is a global, web-based, microfinance information platform. It provides information on MFIs worldwide, public and private funds that invest in microfinance, MFI networks, raters and external evaluators, advisory firms, and governmental and regulatory agencies.

audited financial statements based in 65 emerging market countries. The applicable reporting standards are not entirely consistent across countries. The same problem arises for emerging market commercial banks. However, the precise reporting standards are not as important in correlation analysis as they would be in analysis of absolute levels, especially when using a fixed-effects model. More important is consistency within each institution and comparability between MFIs and commercial banks.

For emerging market commercial banks we use available data from Bloomberg. We exclude institutions from NIC4[16] countries and Malaysia as well as the Gulf OPEC countries. MFIs do not operate in these countries. Altogether, the database contains information for 105 commercial banks based in 22 emerging market economies. (Exhibit 1)

Methodology

We use a fixed-effects model, which controls for differences in the levels of variables associated with individual institutions – a standard approach when dealing with panel data. As in any OLS regression model, the key assumption is that the impact of the independent variable is the same for a given type of financial institution (MFI or emerging market commercial bank). Other available models such as the random effects estimator may yield more precise results, but only at the expense of stronger assumptions – which in this case are certain to be excessively restrictive and contain a high risk of misspecification bias in the results.

We use a two-step approach. First, we conduct an individual OLS regression for MFIs and commercial banks to estimate the regression coefficient and R^2 value for each of the dependent variables. Second, we run an OLS regression with both types of institutions and an interaction term of a dummy variable for emerging market commercial banks and the explanatory variable. The significance level of the interaction term coefficient provides a direct test for differences between the two types of institutions. The findings are depicted in

---

[16] South Korea, Taiwan, Hong Kong and Singapore

Exhibits 2-5, showing the statistical significance of the regression coefficients (t-values are in parentheses following the regression coefficient), and significant results are marked by the shaded fields. "Significance" is defined at the 95% level of confidence and "high significance" is defined at the 99% level of confidence.

Correlation of Microfinance with Global Capital Markets

The R^2 values and regression coefficients obtained are relatively low.[17] One explanation is our use of accounting data, where accounting earnings tend to be smoothed relative to the underlying value of the company as accountants spread expenses and income over multiple periods. This reduces the apparent market-risk (R^2) as well as the beta, since market impacts are not directly reflected in annual accounting results. Further, the substandard quality of the accounting data for both MFIs and emerging market commercial banks creates variation that cannot be explained by the model, and therefore lowers the R^2.

The percentage change in net operating income does not show a statistically significant correlation with the S&P 500 index for either MFIs or emerging market commercial banks, and the same holds true for the MSCI Emerging Markets index, although there is weak significance in the correlation between MFI financial results and the MSCI World Equities Index. However, there is a significant difference in the correlations for the two sets of firms with respect to the S&P 500 index. The low R^2 shows that the explanatory power of the accounting beta regressions is very limited.

MFIs also do not show significant correlation with the S&P 500 index with regard to their operating fundamentals – ROE, profit margin, total asset growth, loan portfolio growth, and asset quality. All R^2 values are extremely low.[18] MFIs show higher correlations on ROE and profit margins with the MSCI World and Emerging Market indexes. Emerging market commercial banks likewise do not

---

[17] The median R-squared of companies listed on the NYSE was approximately 19% in 2000. This number has been obtained from regressions with historical market data though and thus is not directly comparable.
[18] However, the "real" R^2 should be higher due to the use of accounting data

show a statistically significant correlation for the two profitability indicators ROE and profit margin. For both asset measures analyzed, emerging market commercial banks do show highly significant correlation with the S&P 500 index. Significant correlations for emerging market commercial banks is also evident for the MCSI World index in the case of profit margin, asset growth and loan portfolio growth, and for the MSCI Emerging Markets index for profit margin and asset growth.

Correlation of Microfinance With the Domestic Economy

We use gross domestic product as the appropriate independent variable for systemic risk associated with emerging market firms. The alternative, emerging market stock indexes, are often driven by very few locally listed firms and may not reflect the underlying economic performance of a country. In many emerging markets, betas are likely to be close to one for the large companies that dominate the local index and wildly variable for all other companies. Moreover, since some of the emerging market commercial banks in the sample are likely to represent significant parts of domestic stock markets, reverse causality could be a major problem associated with choosing domestic stock indices as the independent variable. Although the banking sector is an important driver of the economy, reverse causality should be of less concern with respect to GDP as the independent variable. Finally, it was only possible to gather accurate stock market information for approximately half of the 72 countries in our sample, which would have led to the loss of a large number of observations.

Net operating income. Domestically, changes in the net operating income of MFIs show no correlation with GDP movements. For commercial banks, on the other hand, more than 4% of the changes in the net operating income can be explained by changes in domestic GDP. Once again, it is important to note that the underlying market risk (R^2) could be considerably higher, since the use of accounting data reduces the explanatory power of the model. For commercial banks, net operating income declines by 11.25% for every 1% drop in GDP.

Furthermore, with a 99% level of confidence commercial banks co-move more with changes in GDP than MFIs.

Fundamentals. The fundamental parameters of MFIs show significant correlation for two of the five parameters tested – ROE and portfolio at risk. The signs of these coefficients are as expected, showing cyclical behavior. Emerging market commercial banks show highly significant coefficients for all five fundamental independent variables tested:[19] ROE of emerging market commercial banks show significantly greater market risk, suggesting that their profitability is more exposed to systemic risk.

3. Correlation of Microfinance in Times of Severe Macro Distress

In order to gauge whether microfinance is resistant to domestic economic crises, we tested the impact of the macroeconomy on net operating income for GDP growth of less than 1%. Whereas market risk remains low for MFIs (0.16% with an insignificant negative coefficient) the market risk for commercial banks is much higher (17.3%), with a significance coefficient of 42.3.[20] The number of observations, however, is small – 70 MFI and 77 commercial bank observations. Moreover, the result regarding commercial banks seems to be driven in large part by three institutions that show highly negative net operating income during times of a severe decline of growth. The data do not permit rigorous statistical stress-testing in this case. However, in an overview of the performance of MFIs during economic and financial crises in emerging markets, Gonzales and Rosenberg [2006] suggest that MFIs significantly outperform commercial banks. Studies by Jansson [2001] on Colombia, Peru and Bolivia, MicroRate [2004] on Bolivia, Fonseca [2004] on Argentina, Ecuador and Bolivia, Duff and Phelps on Colombia [Aristizabal, 2006] and Patten, Rosengard and Johnston [2001] on Indonesia find that - although MFIs are not immune to macroeconomic shocks - they tend to be significantly less effected than commercial banks. Furthermore, MFIs seem to recover faster from times of economic distress than commercial

---

[19] Please note that all observed regression coefficients are consistently higher for commercial banks as well

[20] T-test: 2.59 (95% confidence interval: 9 to 75.7)

banks. The correlation with major adverse market movements seems to differ among countries and types of microfinance institutions.

Findings contained in these case-studies suggest that MFI portfolio quality is also less exposed to major adverse market movements than commercial banks, so future empirical work incorporating appropriate data for this parameter may show this to be the case.

4. Why Microfinance is Different

The preliminary empirical evidence suggests that MFIs are to a significant extent detached from major markets and from domestic macroeconomic conditions that affect the performance of conventional banks. Here we consider the source of these differences in risk exposure and the extent to which MFIs will be able to sustain this advantage as the microfinance industry matures. Although commercial banks and MFIs both focus on retail banking, their business models show significant differences affecting their market exposure, as summarized in Exhibit 6.

Ownership and Governance

Most emerging market commercial banks are publicly traded companies. Shareholders generally represent domestic and international portfolio investors. The lack of a dominant long-term investor base in most emerging markets is often associated with substantial stock market volatility in these countries, with local investors largely driven by technical trading strategies. International portfolio investors are highly sensitive to market signals, and emerging market crises have demonstrated their impact on local markets once cross-border capital flows suddenly reverse direction. One consequence of such sharp reductions in local market liquidity is often a dramatic drop in the value of listed companies which reduces the KMV "distance to default" of these institutions.[21]

---

[21] The KMV model of default risk considers that the equity of a firm essentially represents a call option with an exercise price that is equal to the book value of the firm's debt. The model calculates the probability of default based on the distance between the firm's value and its debt. A

MFIs, on the other hand, are virtually all privately-held companies, with the main shareholders generally consisting of various kinds of institutions – both for-profit and nonprofit investors who have a long-term strategic interest and are less driven by market forces. Jansson [2001] finds that strong ownership structures - with owners who have financial resources and sufficient equity status to closely monitor MFIs - is a key advantage.[22]

A second implication of a sudden decrease in local-market liquidity is that refinancing becomes increasingly difficult for commercial banks with asset-liability maturity mismatches. Here again MFIs seem to have an advantage – i.e., continuous funding via international development agencies which understand the importance of this sector to the local economy [Fonseca, 2004]

If MFIs increasingly become commercial enterprises that access domestic and international financial markets, the stability advantage in terms of ownership structures is likely to deteriorate. With respect to the 1997-98 Asia financial crisis, McGuire and Conroy [1998] find that microfinance appears to have suffered most where it was linked into the formal financial system and caught up in local financial crises. Commercial equity investments in microfinance thus far remain marginal, so that microfinance is likely to benefit at least in the medium-term from the sponsorship and monitoring by nonprofits and international aid organizations.

Client Characteristics

MFIs target the "unbankable" – customers with very low income and virtually no collateral. Almost all microfinance customers represent "entrepreneurs" – generally one of the prerequisites of obtaining microfinance credit. This restriction, combined with clients' awareness of the high productivity of early-stage capital expenditures, explains a significantly higher investment ratio for MFI customers. Investing instead of consuming can reduce exposure to market risk.

---

significant decline in the value of a company is associated with the risk of bankruptcy. See http://www.moodyskmv.com/.
[22] See also Franks (2000).

In addition to showing more resilience and a higher capacity to adapt [Fonseca, 2004] microentrepreneurs may be less integrated into the formal sector of the economy. Whereas commercial banking clients may be highly dependent on imported inputs, for example, microentrepreneurs may employ mainly domestically-produced goods and services, which render them less exposed to currency devaluation or imposition of exchange controls. Moreover, the tendency for customers to move "downmarket" to cheaper, domestically produced goods during times of economic stress may have a countercyclical effect on microentrepreneurs. Micro-borrowers may also value their access to credit more highly than ordinary commercial bank customers, since it may represent their only opportunity to access financial services [Patten, Rosengard and Johnston, 2001]. As Robinson [2001] points out, fewer alternative sources of financing increase repayment discipline, and thus may support the resilience of MFIs to financial crises.

Such MFI client characteristics are not necessarily permanent, and mission-drift away from the poorest – a strategy that may appear attractive in terms of increasing returns – potentially has a negative impact in terms of MFI exposure to systemic risk. Focusing on Indonesia, Malaysia, Philippines, Thailand and South Asia during the 1997-98 Asia crisis, McGuire and Conroy [1998] find that countries with the greatest concentrations of poverty were materially less affected by the financial shock. They also find that MFIs focusing solely on the poor appear to have withstood the crisis better than lenders not specifically targeting the poor. Finally, an Inter-American Development Bank study on Bolivia [Rodriguez, 2002] finds that institutions serving principally or exclusively low-income women showed a higher degree of sustainability in times of crisis. Such evidence suggests that MFIs which continue to focus on the poor and maintain a deep understanding of, and close ties to, their customers may be able to preserve their resistance to macro crises.

Product Characteristics

15

The average loan of a commercial bank is larger in size, bears a lower interest rate, and has a longer maturity than the average MFI loan. The first two characteristics should not have a major impact on systemic risk – i.e., the greater granularity of MFIs portfolios decrease their borrower-specific risk exposure. Loan maturity, on the other hand, influences the exposure to market risk. Retail banks are in general adversely affected by increases in interest rates, since their borrowing rate is highly flexible (often floating), whereas their lending rates tend to be "sticky". A longer average maturity of outstanding loans increases this inflexibility. It reduces their capability to adjust lending terms or to temporarily reduce lending activity in case of unfavorable movements in interest rates.

Differences in product characteristics again suggest that MFI mission-drift away from services to the poor would come at the expense of a higher exposure to systemic risk as against MFIs that continue to focus on small loans with short average maturities.

Lending Techniques

Microfinance lending differs from traditional commercial banking mainly in the lack of collateral. Since loan covenants such as pledges of collateral reduce exposure to credit risk, commercial banks seem to have an advantage in terms of portfolio quality. However, there are several "soft factors," which can turn out to be more important than collateral, especially in countries with highly unstable and inefficient legal systems. Jansson [2001] explains the superior economic performance of MFIs during times of economic distress in terms of "close ties to and knowledge of borrowers and local markets, and solid screening and incentive mechanisms to identify and encourage good and strong clients." A GTZ study finds that women, who represent a large percentage of MFI clients, tend to have above-average debt service reliability.[23] While MFIs have a disadvantage with respect to collateral, they may thus have offsetting advantages with respect to screening and relationship management. Moreover, the very short periods

---

[23] For cites to the relevant GTZ studies, see http://search.gtz.de/livelink-ger/livelink.exe/1972878903.

between installments (usually weekly or bi-weekly) allow MFIs to carefully monitor portfolio quality and rapidly adjust their lending practices and liquidity if necessary.

Whereas better enforcement of property rights and credit reporting standards will help MFIs increasingly secure loans with collateral, their strong local ties and commitment to serve the poor may support high portfolio quality even in times of financial distress. The "village-banking model"[24] of lending principally or exclusively to low-income women appears to be important in reducing credit losses in times of financial distress. Marconi and Mosley [2005] find that organizations which provide savings, training and quasi-insurance services perform particularly well under stress conditions.

Differences in Operating Leverage

Ceteris paribus, higher operating leverage results in greater earnings variability. Although reliable data on the relevant variables is unavailable for MFIs, our dataset indicates that commercial banks may have a higher operational leverage, since they tend to be more dependent on fee-based services such as investment management, mortgage-banking, transaction-banking and credit card business.[25] Apart from being more volatile [DeYoung and Roland, 1999], the input mix required to produce such financial services may generate higher fixed costs than those needed to provide traditional credit products. MFIs that diversify their activities may indeed reduce firm-specific risk, but adding business lines with higher fixed-costs will tend to increase their operating leverage and exposure to systemic risk.

Differences in Financial Leverage

---

[24] Community-run and community-focused credit and savings associations, particularly in areas untouched by the formal financial industry. The village banking method is highly participatory. It gives beneficiaries a voice and it involves them in the development process. Members not only receive loans, they form cohesive groups who manage and collect repayments on those loans, who save diligently and decide on ways to invest those savings, and progress together, forming networks for mutual support. (Source: www.villagebanking.org)

[25] the ratio of total loans to total assets averaged 78% for MFIs, while that of emerging market commercial banks averaged 53% during the period under study

Financial leverage has the same effect as operating leverage, since interest rate payments are part of the fixed obligations of a company. Thus, increased financial leverage tends to raise earnings volatility. Comparing the financial leverage of MFIs with the financial leverage of commercial banks[26] suggests that the debt-equity ratio for MFIs averaged 2.5 while that for commercial banks averaged 7.5 during the period under study. A mean tax rate of 19% for both types of institutions suggests that MFIs would need an equity beta of approximately 2.3 times the equity beta of commercial banks to incur the same market risk exposure.

Bank borrowing for 30 MFIs analyzed by MicroRate increased from 23% of their external financing in 1999 to 46% in 2004. Whereas NGOs usually find it difficult to borrow more than twice their equity, debt-to-equity ratios among regulated MFIs are comparable to those of commercial banks. As the industry matures and MFIs become regulated financial institutions, the differences in financial leverage between MFIs and commercial banks is likely to diminish. The positive impact of such an increase in financial leverage on MFIs – in terms of moving toward an optimum capital structure – and the resulting (potentially) higher growth and profitability comes at the expense of an increase in systemic risk.

5. Conclusions

This paper has examined systemic risk associated with microfinance. MFIs generally show weaker correlation with major and emerging market equity indexes and with domestic GDP in their home countries that do commercial banks. The summary of findings is presented in Exhibit 8. Microfinance institutions in general seem to be significantly less exposed to market risk than developing country commercial banks in terms of key financial and operating metrics, which suggests that microfinance may form a distinctive financial asset

---

[26] Since there are no data on financial leverage for institutions in the dataset, we used other sources. The average for MFIs was calculated from data obtained from Developing World Markets on 29 MFIs. For commercial banks, the ratio is a national average of U.S. commercial banks. Financial leverage is likely to be lower for emerging market banks since the leverage is usually a function of the creditworthiness – still, this figure ought to be a useful benchmark.

class. We argue that the difference in market risk between microfinance and emerging market commercial banking is based on differences in ownership and governance, client and product characteristics, lending methodologies and the lower operational and financial leverage.

This study complements other research regarding the performance of MFIs, but is constrained by problems of data quality and applicable methodology. The absence of marked-to-market valuation and limited audited financial information for MFIs renders data quality the most important constraint to defensible empirical research in this area. With MFIs increasingly adhering to well-defined reporting standards, future studies may be able to confirm our results obtained at a higher level of confidence.

REFERENCES

Aristizabal, Gustavo (2006), "The Nuts and Bolts of Rating Microfinance Institutions: Case from Colombia", *Duff & Phelps de Colombia.*

Consultative Group to Assist the Poor (2002), *Donor Brief*, 6.

Consultative Group to Assist the Poor (2004), *Annual Report.*

Credit Suisse (2005), "Microfinance", *Global Investor Focus*, Spring.

DeYoung, Robert and Karin P. Roland (1999), "Product Mix and Earnings Volatility at Commercial Banks: Evidence from a Degree of Leverage Model", *Working Paper Series Federal Reserve Bank of Chicago.*

Easton, Tom (2005), "The Hidden Wealth of the Poor", *The Economist*, November 5.

Fonseca (2004), "Facing the Music: How to Survive in the Midst of Crisis", *Microenterprise Americas.*

Franks, Jeffrey (2000), "Macroeconomic Stabilization and the Microentrepreneur", The Journal of Microfinance, 2 (1).

Gonzalez Adrian and Richard Rosenberg, (2006). "The State of Microcredit – Outreach, Profitability, and Poverty," *Access to Finance: Building Inclusive Financial Systems Conference*, World Bank, May 30

Jansson, Tor (2001), "Microfinance: From Village to Wall Street", Inter-American Development Bank.

Jansson, Tor and Miguel Taborga (2000), "The Latin American Microfinance Insdustry: How does it Measure up?" *Inter-American Development Bank.*

Littlefield, Elizabeth and Holtman, Martin (2005), in "Microfinanciers Overtake their Commercial Peers", *The Banker*, July 4.

Marconi, Reynaldo and Paul Mosley (2005), "Bolivia during the Global Crisis 1998-2004: Towards a macroeconomics of microfinance", *Sheffield Economic Research Paper Series.*

McGuire, Paul and John Conroy (1998), "Effects on Microfinance of the 1997-1998 Asian Financial Crisis," Foundation for Development Cooperation, Brisbane, Australia, November.

Patten, Richard, Jay Rosengard and Don Johnston (2001), "Microfinance Success Amidst Macroeconomic Failure: The Experience of Bank Rakyat Indonesia During the East Asian Crisis", *World Development*, 29 (6), pp. 1057-1069.

Robinson, Marguerite (2001), "The Microfinance Revolution. Sustainable Finance for the Poor", *The World Bank.*

Saunders, Anthony and Ingo Walter (2002), "Are Emerging-Market Equities A Separate Asset Class?", *Journal of Portfolio Management,* Spring.

Exhibit 1
Description of the Dataset

Dependent Variables	MFIs				Commercial Banks			
	Obs.	Mean	Median	Std. Dev.	Obs.	Mean	Median	Std. Dev.
Net operating Income % change	700	73.5%	44.4%	196%	597	18.6%	10.5%	139%
Return on Equity	1008	6.1%	9.3%	30.8%	659	9.5%	12.9%	32.4%
Profit Margin	1073	12.4%	13.9%	21.3%	841	9.9%	10.3%	13.2%
Total Assets % change	949	42.2%	35.7%	38%	600	7.9%	5.3%	20.1%
Loan Portfolio % change	929	47%	40%	41.2%	594	6.3%	4.3%	24.5%
Portfolio at Risk %	1070	3.7%	2.4%	3.9%	N/A	N/A	N/A	N/A

Exhibit 2
Correlations with S&P 500 Index

Dependent Variable	MFIs	CBs	MFIs vs. CBs
Net Operating Income % change	Coefficient: -.67 (-1.73) r-sq: 0.0063	Coefficient: .33 (1.04) r-sq: 0.0022	Dummy Coef.: 1.01 (2.00)** (95% CI: .02 to 2.0) r-sq: 0.0049
ROE	Coefficient: .04 (1.16) r-sq: 0.0018	Coefficient: .04 (0.86) r-sq: 0.0013	Dummy Coef.: .00 (0.01) r-sq: 0.0016
Profit Margin	Coefficient: .04 (1.67) r-sq: 0.0035	Coefficient: .03 (1.34) r-sq: 0.0033	Dummy Coefficient: -.01 (-0.39) r-sq: 0.0034
Total Assets % change	Coefficient: -.07 (-1.24) r-sq: 0.0023	Coefficient: .17 (4.01)*** (95% CI: .086 to .25) r-sq: 0.0316	Dummy Coefficient: .23 (3.16)*** (95% CI: .089 to .379) r-sq: 0.0089
Loan Portfolio % change	Coefficient: -.09 (-1.39) r-sq: 0.0029	Coefficient: .16 (3.19)*** (95% CI: .062 to .262) r-sq: 0.0205	Dummy Coefficient: .25 (2.90)*** (95% CI: .08 to .414) r-sq: 0.0074
Portfolio at Risk	Coefficient: -.00 (-0.71) r-sq: 0.0006	N/A	N/A

Exhibit 3
Correlations with MSCI World Equity Index

Dependent Variable	MFIs	CBs	MFIs vs. CBs
Net Operating Income % change	Coefficient: -.76 (-2.05)** r-sq: 0.0089	Coefficient: .09 (0.32) r-sq: 0.0002	Dummy Coef.: 0.85 (1.84) r-sq: 0.0057
ROE	Coefficient: .06 (1.96)** (95% CI: -.000 to .112) r-sq: 0.0053	Coefficient: .03 (0.66) r-sq: 0.0008	Dummy Coef.: -.03 (-0.54) r-sq: 0.0028
Profit Margin	Coefficient: .05 (2.19)** (95% CI: .005 to .099) r-sq: 0.0059	Coefficient: .04 (2.09)** (95% CI: .002 to .081) r-sq: 0.0080	Dummy Coefficient: -.01 (-0.31) r-sq: 0.0064
Total Assets % change	Coefficient: -.06 (-1.16) r-sq: 0.0020	Coefficient: .15 (3.94)*** (95% CI: .073 to .221) r-sq: 0.0308	Dummy Coefficient: .21 (3.04)*** (95% CI: .073 to .34) r-sq: 0.0084
Loan Portfolio % change	Coefficient: -.08 (-1.31) r-sq: 0.0026	Coefficient: .12 (2.67)*** (95% CI: .032 to .212) r-sq: 0.0146	Dummy Coefficient: .2 (2.53)** (95% CI: .044 to .351) r-sq: 0.0056
Portfolio at Risk	Coefficient: -.00 (-0.85) r-sq: 0.0009	N/A	N/A

Exhibit 4
Correlations with MSCI Emerging Markets Equity Index

Dependent Variable	MFIs	CBs	MFIs vs. CBs
Net Operating Income % change	Coefficient: -.45 (-1.75) r-sq: 0.0065	Coefficient: -.15 (-0.83) r-sq: 0.0014	Dummy Coef.: 0.3 (0.98) r-sq: 0.0047
ROE	Coefficient: .05 (2.47)** (95% CI: .01 to .085) r-sq: 0.0084	Coefficient: -.01 (-0.2) r-sq: 0.0001	Dummy Coef.: -.05 (-1.65) r-sq: 0.0037
Profit Margin	Coefficient: .03 (2.21)** (95% CI: .004 to .066) r-sq: 0.0061	Coefficient: .02 (1.98)** (95% CI: .000 to .048) r-sq: 0.0072	Dummy Coefficient: -.01 (-0.51) r-sq: 0.0063
Total Assets % change	Coefficient: -.03 (-0.82) r-sq: 0.0010	Coefficient: .08 (3.14)*** (95% CI: .029 to .125) r-sq: 0.0198	Dummy Coefficient: .11 (2.32)** (95% CI: .016 to .194) r-sq: 0.0052
Loan Portfolio % change	Coefficient: -.05 (-1.19) r-sq: 0.0022	Coefficient: .05 (1.67) r-sq: 0.0058	Dummy Coefficient: .1 (1.87) r-sq: 0.0031
Portfolio at Risk	Coefficient: -.00 (-0.41) r-sq: 0.0002	N/A	N/A

Exhibit 5
Correlations with Domestic GDP

Dependent Variable	MFIs	CBs	MFIs vs. CBs
Net Operating Income % change	Coefficient: -1.51 (-0.39) r-sq: 0.0003	**Coefficient: 11.25 (4.58)*** (95% CI: 6.43 to 16.07) r-sq: 0.0412**	**Dummy Coef.: 12.76 (2.86)*** (95% CI: 4.00 to 21.51) r-sq: 0.0162**
ROE	Coefficient: .49 (1.92) r-sq: 0.0054	**Coefficient: 1.24 (4.88)*** (95% CI: .74 to 1.73) r-sq: 0.0431**	**Dummy Coef.: .75 (2.00)** (95% CI: .01 to 1.49) r-sq: 0.0284**
Profit Margin	**Coefficient: .81 (3.44)*** (95% CI: .348 to 1.27) r-sq: 0.0154**	**Coefficient: .99 (7.82)*** (95% CI: .74 to 1.24) r-sq: 0.1017**	Dummy Coef.: .18 (0.67) r-sq: .0375
Total Assets % change	Coefficient: -.07 (-0.14) r-sq: 0.0000	**Coefficient: .94 (2.85)*** (95% CI: .29 to 1.59) r-sq: 0.0164**	Dummy Coef.: 1.01 (1.64) r-sq: 0.0041
Loan Portfolio % change	Coefficient: 1.00 (1.76) r-sq: 0.0050	**Coefficient: 2.17 (5.59)*** (95% CI: 1.41 to 2.94) r-sq: 0.0608**	Dummy Coef.: 1.17 (1.65) r-sq: 0.0205
Portfolio at Risk	**Coefficient: -.13 (-3.23)*** (95% CI: -.21 to -.05) r-sq: 0.0137**	N/A	N/A

Exhibit 6
Why Microfinance May Be Different

Category	Conventional Credit	Microcredit
Ownership and Governance	Profit maximizing institutional and individual shareholders	Downscaling bank or Upgraded NGO. In the latter case, shareholders are mainly nonprofit institutional shareholders
Client Characteristics	Diverse formal businesses and salaried individuals. Geographically dispersed clients.	Low-income entrepreneurs with rudimentary family businesses and limited formal documentation. Located in specific geographic area.
Product characteristic	Larger amount. Longer term. Lower interest rate	Smaller amount. Shorter term. Higher interest rate
Lending Methodology	Collateral and formal documentation. Monthly repayment	Character and cash flow analysis through on-site inspections. Weekly or bi-weekly repayment

Source: Tor Jansson, "Microfinance: From Village to Wall Street", Inter-American Development Bank, 2001.

Exhibit 8
Summary of Statistical Results

MFIs

Parameters tested	S&P 500	MSCI World Index	MSCI EM Index	Domestic GDP
NOI				
ROE		✔	✔	✔
Profit Margin		✔	✔	
TA % change				
LP % change				
PAR 30				✔

Emerging Market Commercial Banks

Parameters tested	S&P 500	MSCI World Index	MSCI EM Index	Domestic GDP
NOI				✔
ROE				✔
Profit Margin		✔	✔	✔
TA % change	✔	✔	✔	✔
LP % change	✔	✔		✔
PAR 30	N/A	N/A	N/A	N/A

Significant Differences Between MFIs and Emerging Market Commercial Banks

Parameters tested	S&P 500	MSCI WI	MSCI EM Index	Domestic GDP
NOI	✔			✔
ROE				✔
Profit Margin				
TA % change	✔	✔	✔	
LP % change	✔	✔		