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In a recent [paper](#), MIX found that external factors, such as market saturation and aggregate country growth, can partially explain crises recently seen in portfolio quality worldwide. This is only part of the explanation; however, the portfolio quality of MFIs is also determined by internal factors such as governance, management information systems (MIS), risk management procedures, and lending methodologies. This article aims to evaluate the role that these procedures and policies play in different scenarios, with emphasis on their interaction with external factors like market saturation levels and MFI growth rates. Is governance more important in periods of accelerated growth than in periods of contraction? Are MIS more critical in highly saturated markets? In the following sections we will evaluate these issues beyond a case study approach; by using consistent measures for procedures and policies, based on data from almost 200 ratings of 130 microfinance institutions by Planet Rating using the GIRAFE methodology. Consistent measurement of these qualitative factors allows proper identification of policies and procedures that are correlated with better portfolio quality.

The study showed that financial services management (A) is the most important determinant of portfolio quality, under all growth scenarios and saturation levels. This was not surprising, because the main components of this category involve credit procedures and policies that are used to select potential borrowers, assess repayment capacity and follow-up on issued loans. Governance (G) and risk management (R) were the next most important sets of metrics, depending on the proxy used for credit risk (e.g. either portfolio at risk over 30 days, write-off ratio or total credit risk) and the scenario under consideration. Both of these variables are related to how managers understand risks and work to prevent them. Information systems and design (I), ranked third in importance, although the average effect was close to two-thirds that of Financial Services Management.

One of the most important findings of this research was the validation of the predictive power of Planet Rating's GIRAFE scores to forecast credit risk 12 months in advance. As the microfinance industry searches for early warning indicators for credit risk and over-indebtedness, this research suggests that MFIs with lower scores or recent reductions in their grades are more prone to credit risk problems and overindebtedness, than MFIs with better grades, in most scenarios.

Methodology:

To measure policies and procedures, [Planet Rating's](#) proprietary [GIRAFE](#) scores were used for the following categories: governance and decision making (G), information and systems (I), risk management (R), and credit methodologies (A). Confidential GIRAFE numerical scores were combined with adjusted portfolio quality data from [MIX](#). The final sample was comprised of 190 ratings for 130 MFIs, for which portfolio quality data is available from 2003 to 2009. For each MFI, rating scores were matched with portfolio quality levels 12 months *after* the date of the rating (or as close as possible within a six month range), under the assumption that ratings should provide an outlook on the future performance of MFIs.

We then analyzed three different proxies for credit risk: portfolio at risk over 30 days (PAR30), write-off ratio (WOR), and total credit risk (defined as PAR30+WOR). As in earlier research, the analysis focused on the levels of credit risk and their relationship with GIRAFE scores, as opposed to changes in the levels of credit risk.² We divided the sample into peer groups based on growth in the number of borrowers and the penetration rate by country (defined as total number of microcredit accounts/total

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² We tested these types of relationships as well, but results were not statistically significant.

population). We then tested the relevance of various categories and subcategories of GIRAFE methodology.³

MFI Growth Levels: To examine growth levels MFIs were divided, for analytical purposes, into three groups by annual growth rates for number of borrowers, for analytical purposes: i) negative growth (NG) for growth rates between -30 and 0%, ii) middle growth (MG) for growth rates between 0 - 50%, and iii) high growth (HG) for growth rates between 50 - 100%⁴. Growth rates were measured between the date of the rating and the date of the portfolio quality indicator. The number of ratings by country and growth level is summarized in Figure 1 below.

Figure 1: Number of Ratings by Level of Growth and Country^{1/}

Negative Growth -30 - -0.01%		Moderate Growth 0 - 49.99%		High Growth 50 - 100%	
Russia	3	Peru	15	B & H	6
Georgia	3	Bolivia	14	Peru	5
Peru	2	B & H	9	Burkina Faso	2
B & H	2	Mali	6	Egypt	2
Morocco	2	Mexico	5	Mexico	2
Benin	2	Morocco	5	Morocco	2
Brazil	2	Jordan	5	Niger	2
		Nicaragua	5	Tunisia	2
		Egypt	4		
		Ethiopia	4		
		Benin	4		
		Brazil	4		
		Senegal	4		
		Guatemala	3		
		Ghana	3		
		Russia	3		
		Vietnam	3		
		Mongolia	2		
Total	31	Total	110	Total	37

1/ Only for countries with more than one rating. Countries may show up in multiple columns if different growth rates are observed for different years.

Market Penetration Levels: When examining market penetration levels MFIs were divided in three categories according to the level of market penetration, measured as the percentage of the total number of borrowers of the total population per country. Information on total number of accounts was estimated by complementing [MIX data](#) with both Microcredit Summit and Inter-American Development Bank data: i) low penetration (LP) for penetration rates between 0 - 3.99% of total population, ii) moderate penetration (MP) for penetration rates between 4 - 9.99%, and iii) high penetration for

³ For each dependent variable (PAR30, WOR, RISK), different fixed effect models were estimated to test different coefficients for the GIRAFE components in each penetration and growth scenario. Given the limited sample sizes, it was not possible to test more than one GIRAFE component at a time, or any combination of penetration and growth scenarios. In addition, no controls were included in any regression.

⁴ Note that this classification is not a policy recommendation for MFIs. In other words, MFIs should not assume that because we define high growth as more than 50% per year, growth levels below that threshold will be safe from the point of view of credit risk. Results are almost identical to the ones presented here if we change the thresholds to 0-30% for MG and more than 30% for HG.

penetration rates above 10 percent. Figure 2 summarizes the number of ratings by country and penetration level.

Figure 2: Number of Ratings by Level of Market Penetration and Country

Low Penetration 0 - 3.99% ^{1/}		Moderate Penetration 4 - 9.99% ^{2/}		High Penetration 10% or more	
Egypt	8	Bolivia	19	Peru	13
Morocco	7	Peru	10	B & H	9
Brazil	7	B & H	9	Nicaragua	5
Mali	7	Mexico	6	Vietnam	2
Benin	6	Guatemala	3	Cambodia	2
Jordan	6	Ecuador	3	Mongolia	2
Russia	6	Vietnam	2		
Ethiopia	5	Morocco	2		
Senegal	5	Burkina Faso	2		
Mexico	4				
Georgia	3				
Ghana	3				
Philippines	3				
Total	97	Total	61	Total	33

1/ Only for countries with three or more ratings. 2/ Only for countries with two or more ratings.

Planet Rating's GIRAFE:

The GIRAFE methodology was created in 1999, and has since been used by Planet Rating on more than 500 ratings in 75 countries. GIRAFE Ratings provide an opinion on the long-term financial sustainability of MFIs by assessing the management of key risks and performance, relative to industry benchmarks and competitors. The methodology has been regularly updated in order to incorporate important evolutions in the nature of microfinance risk. GIRAFE constitutes an acronym for the 6 assessment domains that are in turn split into 17 analytical factors. The general framework of GIRAFE is detailed in Figure 3.

Figure 3: GIRAFE General Framework

Rating domain and factors	Description	Weight
Microfinance Sector	A sound organization of the microfinance activities in a given country ensures that the efforts made by a given institution to build efficient systems and operations will not be hindered or cancelled by important sector crisis. This domain evaluates the existence of efficient supervision and regulation as well as the level of collaboration of MFIs, even in contexts of high competition. Institutions operating in countries where regulatory systems are not effective are rewarded for efforts made towards self-regulation or "informal regulation" through national microfinance associations or international networks.	Cap on general grade

Governance and Decision Making (G) <ul style="list-style-type: none"> - Decision making; - Planning; - Management team; - Human Resource management 	<p>This area reviews the effectiveness of the decision-making process (notably skills of decision makers, balance of powers, good monitoring information and follow-up on decisions), the relevance of the MFI's strategy, and the coherence between the strategic vision and operations. It also assesses the skills of the management team and the entire staff, including an evaluation of the human resource management system. To evaluate this critical area, interviews are conducted with members of the Board of Directors and management. Analysts also review statutes and meeting minutes for all governing bodies. Meetings with other local players regarding the regulatory environment and the state of the local microfinance sector are included in this analysis.</p>	24%
Information and System (I)	<p>The availability and accuracy of information as well as system security and appropriateness are assessed in this section. Analysts review the information flow to assess the quality of the information and perform a mini-audit of the portfolio. The analysis is complemented by interviews with the external auditor regarding the methods used and the findings.</p>	10%
Risk Management (R) <ul style="list-style-type: none"> - Internal controls - Internal audit 	<p>This area evaluates the quality of risk management within the MFI to determine whether the directors, internal auditor, and all other key personnel have adequately identified the risks related to their work. The existence of controls in place to cover these risks is verified. Analysts review the internal procedures, the internal audit process, and the overall approach to risk management via interviews with staff, the Internal Auditor and field visits.</p>	10%
Activities (A) <ul style="list-style-type: none"> - Financial Services Management - Credit risk level - Credit risk coverage 	<p>This area focuses on the evaluation of the quality of the management of the financial services provided by the MFI as well as the quality of the loan portfolio. This analysis includes a review of credit procedures as well as the application of those procedures in the field via client file reviews and interviews with loan officers and clients.</p>	20%
Financing and liquidity (F) <ul style="list-style-type: none"> - Capital adequacy and funding strategy - Market risks - Liquidity risk 	<p>This area includes an analysis of an MFI's capital structure, financing strategy, and the appropriateness of the asset liability management given its risk exposure (interest rate, currency, and maturity). Special attention is placed on liquidity management, the management of short-term investments and cash flow projections.</p>	14%
Efficiency and Profitability (E) <ul style="list-style-type: none"> - ROA - Revenue quality - Operating efficiency - Asset deployment 	<p>The analysis determines whether the business model of the MFI is a sustainable one in the long run. The analysis focuses on the market position and competitiveness of the MFI, its operating efficiency and ultimately, its capacity to achieve a reasonable return on assets. The evaluation of this area is necessary whether or not the MFI seeks to be profitable, as an MFI's efficiency determines its capacity for outreach and the quality of its services.</p>	22%

Sample

The sample of MFIs with both GIRAFE scores and data on portfolio quality was not biased towards MFIs with good ratings. In particular, for the overall GIRAFE score, the lowest quartile of the sample was under 2.6 (C grades or worse), the third quartile was between 3.3-3.8 (B grades), and the 90th percentile was 4.2 (A grade). Similar distributions were observed for all individual components of GIRAFE scores. In terms of portfolio quality, the sample was not biased towards MFIs with low risk levels, as the median PAR30 was 2.2% and median WOR was 1.1%, and the 75% percentiles were 5.5% and 2.7 respectively. Summary statistics for all variables are presented in Figure 4 below.⁵

Figure 4: Descriptive Statistics of Sample

	Obs.	Average	Percentiles				
			10%	25%	50%	75%	90%
-Portfolio Quality							
Portfolio at risk over 30 days	192	4.4	0.1	0.8	2.2	5.5	11.2
Write-off Ratio	183	2.3	0.0	0.3	1.1	2.7	5.9
-Penetration Rate and Growth Level							
Penetration Rate	191	5.3	0.5	2.0	3.9	8.7	11.0
Borrowers Growth	179	25	-12	4	19	44	62
-GIRAFE							
Overall Score	192	3.2	2.0	2.6	3.3	3.8	4.2
		<i>Bs</i>	<i>Cs</i>	<i>Cs</i>	<i>Bs</i>	<i>Bs</i>	<i>As</i>
Governance							
-Decision Making	192	3.1	2.0	2.5	3.0	3.5	4.0
-Planning	192	3.1	2.0	2.5	3.0	3.5	4.0
Information and Systems	192	3.2	2.0	2.5	3.5	3.9	4.1
Risk Management							
-Procedures and Internal Controls	192	3.3	2.0	2.5	3.5	4.0	4.5
-Internal Audit	192	2.8	1.5	2.0	3.0	3.6	4.0
Activities							
-Fin. Serv. Management	192	3.4	1.9	2.7	3.6	4.3	4.5
-Credit Risk Coverage	192	3.7	1.5	3.0	4.0	5.0	5.0

Results

Policies and Procedures are Less Relevant in Saturated Markets

The level of market development has an impact on the relationships between portfolio quality and policies and procedures. In particular, it is expected that low-penetration markets (penetration rates under 4% of total population) are less mature and more risky, with more room for learning by MFIs. In this context, having the best policies and procedures can be critical for success. In contrast, moderate penetration markets (4-10% penetration rates) have achieved significant scale and maturity, which suggests that MFIs have succeeded at creating a culture of repayment, designed more appropriate products for their clients, and have the right institutional and political infrastructure for the development of microfinance. Thus, we expect that policies and procedure are more critical in low penetration than in moderate penetration markets. In addition, previous research by MIX suggests that high penetration rates are associated with a deterioration of portfolio quality. Therefore, it is

⁵ The median PAR30 and write-off ratio were around 3% and 0.3% respectively for all MFIs reporting to MIX Market the 2006-2008 period. Thus, current sample is slightly better than population in terms of PAR30, but worse in terms of write-off ratio.

expected than in high-penetration markets, policies and procedures matter more than in moderate penetration markets.

The results from the econometric analysis are summarized in Figure 5. The coefficients in this table represent the expected average differences in the respective portfolio quality indicator that are associated with a 1 point difference in the respective GIRAFE Score. For instance, the -3.5 coefficient for the aggregate GIRAFE score and PAR30 indicates that, on average, in low and moderate penetration markets, the PAR30 of MFIs with an A grade will be 3.5 percentage points lower than the PAR30 of MFIs with a B, and 7 percentage points lower than that of MFIs with a C. In contrast, the zero coefficients for high penetration countries indicate a lack of statistical evidence for a connection between PAR30 and the overall GIRAFE score in high penetration markets.⁶

Figure 5: Average Effects between GIRAFE and Portfolio Quality by Penetration Level⁷

Risk Proxy & Penetration Level		GIRAFE Score	Governance and Decision making			Information Systems	Risk Management			Activities	
			Avg. Score	Decision Making	Human Resources		Avg. Score	Internal Controls	Internal Audit	Avg. Score	Fin. Services
PAR30	LP	-3.5	-2.3	-2.5	-1.8 Stronger for LP	-1.9	-2.7	-2.7	-1.4	-3.8	-4.3
	MP						0.0	0.0		0.0	-2.5
	HP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
WOR	LP	-1.4	-0.7 Weaker for HP	-0.0 Stronger for LP	-0.9 Stronger for LP	-0.5 Stronger for LP	-0.6 Stronger for LP	-0.74 Stronger for LP	0.0	-1.5 Stronger for HP	-1.4
	MP						0.0	0.0		0.0	0.0
	HP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
RISK	LP	-5.3	-3.5	-3.5	-3.1 Stronger for LP	-2.9	-4.1	-4.1	-2.4	-5.2	-5.0 Stronger for LP
	MP			0.0							
	HP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Legends:

Differences between penetration categories are statistically significant based on likelihood ratio tests for model specification. Zeros suggest very small effects and not statistically significant for the particular category.

Differences between penetration categories are not statistically significant based on likelihood ratio tests for model specification. However, t-testing of coefficients suggest a potential difference, not to be discarded given small sample size.

Effects are not statistically different between penetration categories.

This analysis suggests that, for portfolio quality, most policies and procedures are more relevant in countries with low and moderate penetration rates than in saturated markets. Indeed, for PAR30 and Risk, the analysis suggests that the policies and procedures under analysis are irrelevant in saturated markets, as shown by the zero coefficients in the high penetration scenarios (suggesting very small and statistically insignificant effects).

The results for low- and medium-penetration markets confirm the hypotheses previously discussed:

1. There is a clear link between higher grades (better policies and procedures) and lower credit risk for all indicators.
2. However, in high penetration markets, portfolio quality is less associated with internal factors such as good policies or procedures.

We should not conclude from the results that the policies and procedure under analysis are irrelevant in high penetration countries, but rather that the indicators currently used are not effective to differentiate MFIs with policies and procedures that are linked to better credit risk in high-penetration countries.

Indeed the phenomenon of market saturation is relatively recent in microfinance and it is in clear contrast with the perception that untapped demand is so high that saturation is not likely to happen for many years. The risks related to market saturation have thus probably been underestimated until

⁶ Coefficients in Figure 5 should be interpreted the same way.

⁷ All GIRAFE components are highly correlated with each other (correlations over 80%), so it was not possible to test in a single regression how each variable interacts with the others.

recently. In general, the analysis suggests that MFIs, raters, investors and funders need to adapt their analysis for countries with high penetration (or high growth, which might rapidly lead to high penetration), as indicators that are efficient for low and medium penetration markets may not be sufficient any longer.

In response, Planet Rating has updated its methodology to increase the requirements for policies and procedures specifically designed to mitigate risks in saturated markets. Changes include: stricter requirements in terms of the evaluation of market potential; cautious integration of growth targets for loan officers in already well-served areas; precise evaluation of the indebtedness level of clients even in case of group loans and prudent evaluation of the repayment capacity; financial education for clients regarding the risks related to multiple lending. The weighting of these factors is likely to be fine-tuned in the coming year.

Another potential explanation of the low discrimination that the currently tested indicators have in high penetration markets is that several of these markets have seen contagion in repayment crises that affected all MFIs. Anecdotal evidence suggests that in case of high-penetration markets, the performance of one MFI depends on the performance of its peers, and the general level of organization of the sector (be it through regulation or self-regulation) also matters. Neither factor has been tested in the current research.

Policies and Procedures are More Relevant during Contractions than during Expansions

Similar to Figure 5, the coefficients in the following table represent the expected average differences in portfolio quality associated with a 1 point difference in the respective GIRAFE indicator. For instance, the -6.0 coefficient for the aggregate Activities score and PAR30 indicates that, on average, for MFIs experiencing contractions in number of borrowers, the PAR30 of MFIs with an A grade will be 6 percentage points lower than the PAR30 of MFIs with a B, and 12 percentage points lower than that of MFIs with a C grade. Overall, the results suggest that policies and procedures matter during all growth scenarios under analysis. However, for PAR30 and RISK, policies and procedures are more relevant during contractions than during periods of moderate or accelerated growth. For WOR, most policies and procedures have similar effects in all three growth scenarios, with the exception of the average scores for Governance and Decision Making.

Figure 6: Average Effects between GIRAFE and Portfolio Quality by Growth Level

Risk Proxy & Growth Level		GIRAFE Score	Governance and Decision making			Information Systems	Risk Management			Activities	
			Avg. Score	Decision Making	Human Resources		Avg. Score	Internal Controls	Internal Audit	Avg. Score	Fin. Services
PAR30	NG	-5.6	-5.2	-5.3	-3.6	-3.6	-3.3	-3.0	-2.6	-6.0	-5.6
	MG	-2.5	-1.1	-0.4	-1.1	-1.5	0.0	0.0	0.0	-2.4	-2.4
	HG										
WOR	NG	-1.0	0.0	0.0	-0.7	-0.6	-0.7	-0.8	0.0	-1.8	-1.4
	MG		-1.4							-0.9	
	HG										
RISK	NG	-6.6	-5.9	-5.9	-4.6	-2.8	-3.8	-3.6	-2.8	-8.2	-6.7
	MG	-3.4	-1.7	-1.0	-1.7	Stronger for LG	-1.4	-1.3	-1.0	-3.2	-3.2
	HG										

Legends:

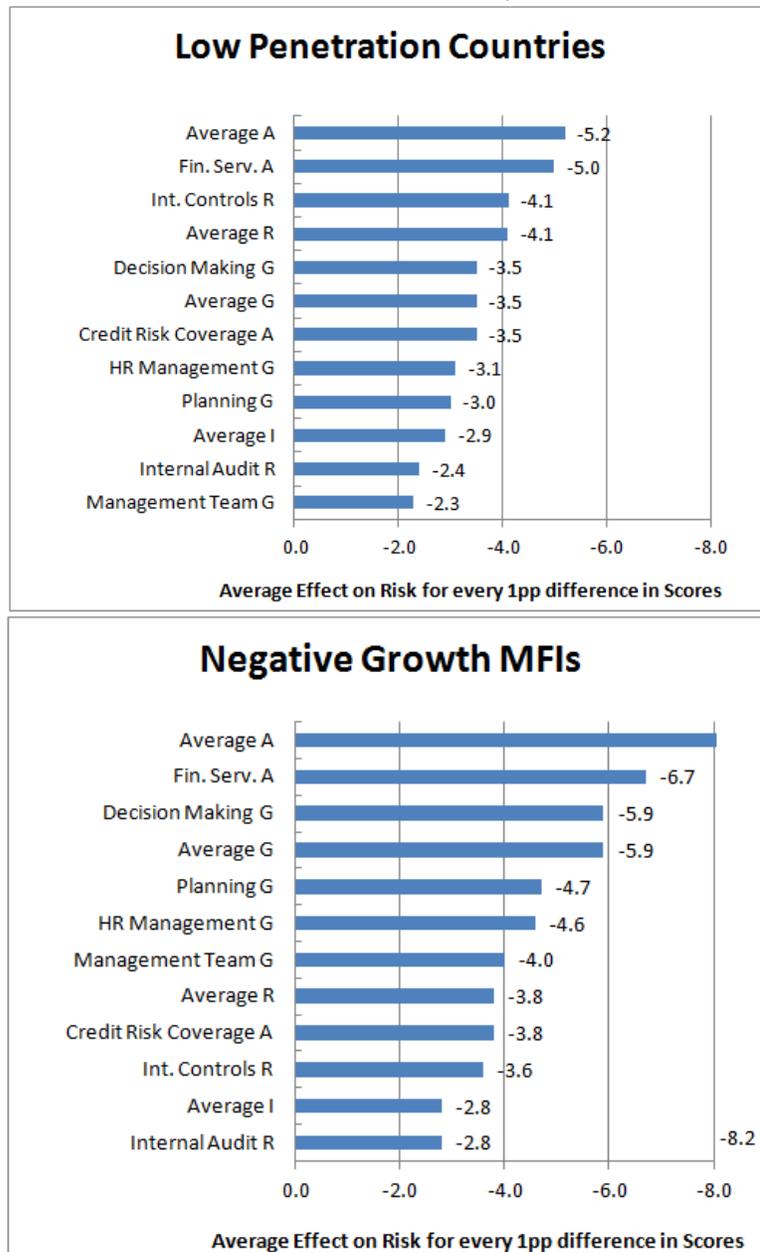
Differences between growth categories are statistically significant based on likelihood ratio tests for model specification. Zeros suggest very small effects and not statistically significant for the particular category.

Differences between growth categories are not statistically significant based on likelihood ratio tests for model specification. However, t-testing of coefficients suggest a potential difference, not to be discarded given small sample size.

Effects are not statistically different between growth categories.

These results are consistent with previous research by MIX suggesting that higher credit risk is observed during periods of contraction, rather than in markets with very high growth. Given that 90% of the observations in the sample experienced a growth rate under 62% per year, this analysis cannot be used to evaluate the importance of policies and procedures during periods of accelerated growth. However, the results suggest that good policies and procedures are like insurance products: more important in times of emergency.

Figure 7: More Relevant Policies and Procedures by Penetration and Growth Level



Lessons for the Microfinance Sector

This research suggests that indicators of the quality of policies and procedures can be good predictors of the level of credit risk of an MFI, even one year before the measurement. This can serve to remind MFIs that the focus on cautious evaluation of client repayment capacity, strong governance systems, internal controls and audits, and quality information remains key in all instances - during periods of high growth and even more so during periods of contraction.

The analysis also suggests that MFIs operating in countries or regions where penetration rates are high should include additional management systems to efficiently mitigate the risks related to market saturation. Based on experience in such countries, Planet Rating suggests attention to the following issues, even if we lack statistical proof of their effectiveness:

- **Market Evaluation**
 - o Careful evaluation of the market potential for the specific products offered by the MFI in its regions of operations, including an evaluation of the level of service by competitors;
 - o Integration in business plans of a review of the strategy of main competitors, including their growth targets;
 - o Definition of several growth scenarios to be able to react in case of deterioration of the portfolio quality

- **Prevention of cross and over-indebtedness**
 - o Review of indebtedness of clients prior to disbursement, especially in cases of group loans;
 - o Adaptation of Loan Officers incentive schemes for areas with high levels of penetration
 - o Detailed analysis of portfolio quality (by region, by product, by economic sector, by month of disbursement) in order to be able to identify early signs of deterioration of the portfolio quality.
 - o Annual evaluation of the level of cross-indebtedness either via credit bureaus or through ad hoc analysis of MFI databases by an independent third party if credit bureaus do not exist

- **Sector Organization**
 - o In general, collaboration and cooperation among MFIs in order to create tools that can help identify areas or segments of saturation (reporting and use of credit bureaus, provision of data to national microfinance network or regulator to create reliable microfinance statistics, notably by region).

Final Comments

Many discussions about the causes of the recent microfinance crisis have undervalued the importance of lending methodologies, in comparison with other policies and procedures such as information systems, risk management, and governance. As the selection process for borrowers is critical to determining the risk exposure of the institution, this oversight is surprising. In this regard, this analysis is the first to rank the importance of different policies and procedures with respect to portfolio quality, and in extreme scenarios of growth and market penetration.

This analysis also reveals that MFIs need to take additional care when operating in highly-saturated markets. Successful operation in less competitive environments is not a guarantee of success as saturation increases. Donors, investors, regulators, and industry analysts may need to be more cautious as well, as we understand better the new dynamics of the sector.

The analysis suggests that good policies and procedures are more important in periods of trouble, than in periods of stability, similar to insurance products. Weak MFIs appear strong when no problems are on the horizon, but shocks will quickly show their true weaknesses and strengths. The challenge for the industry is to take time to re-evaluate targets in high risk markets, and to re-focus attention to young and under-served markets.

Finally, this analysis validates the predictive power of Planet Rating's GIRAFE scores for credit risk 12 months in advance. This is very important for the design of early-warning indicators of credit risk and over-indebtedness, as we were able to validate this relationship on a large sample of MFIs operating in several different markets at different points in time.