Measuring poverty of microfinance clients in Haiti

Rob Fuller, 26 September 2006

Abstract

Fonkoze, a microfinance institution in Haiti, has used a poverty "scorecard" to benchmark existing client data to the $1-a-day extreme poverty line. By referring to data from a national survey of household income, 12 variables already routinely collected by Fonkoze were found to be suitable as indicators of whether a household is above or below the extreme poverty line. A scorecard was constructed, which allocates a number of points to each household depending on their responses to those 12 questions: this total score can then be translated into a probability that each household lies above or below the poverty line. This scorecard has already been used to analyse poverty rates of clients across several Fonkoze branches and credit cycles.

<u>**Introduction**</u>

Fonkoze is Haiti's largest microfinance institution, serving clients throughout rural areas of the country. Since its creation in 1994, Fonkoze has grown to a network of 29 branches, serving over 40,000 female credit clients through its solidarity loan program.

Fonkoze has long had a commitment to tracking the impact of its work on the lives of its clients. Its primary method for collecting information on the wellbeing of its clients is the *Kat Evalyasyon* ("evaluation card" in Creole), which is used to assess all clients on entry to the credit program, and then at intervals as they progress through the program. The tool has been adapted over several years, and now consists of questions on:

- Materials used in the construction of the family's house

- Type of bed and toilet/latrine used by the household

- Ownership and use of land

- Ownership of animals

- Ownership of household goods

- Husband's work

- Whether the household receives transfers from overseas

- Forms of transport used

- Client's level of literacy

- Whether children in the household attend school

- How often the household eats meat.

Fonkoze uses this information to build a broad picture of the characteristics and living conditions of its client base. What it could not do, however, was to provide a

quantitative measure of clients' poverty. Following the recent US legislation on funding

for microfinance, it has become of interest to be able to produce quantitative estimates of

institutions' poverty outreach – that is, what proportion of institutions' clients are living

below a certain poverty line. From a management point of view, it is also of interest to be

able to compare poverty outreach within an institution, between branches and individual

credit agents, and to study how the proportions of clients in poverty changes over time.

How is it possible for microfinance institutions to determine how many of their

clients are living below the poverty line? Measuring poverty status directly is a

complicated, time-consuming and expensive process, which involves asking families

questions on all their diverse sources of income (or, alternatively, on their diverse

household expenditures) with as great an accuracy as possible, in order to calculate

whether each household's income or consumption is above or below the poverty line.

Fonkoze instead followed the approach developed by Schreiner *et al.* (2005) in

developing a poverty "scorecard", consisting of a list of simple questions, each of which

is an indicator of household poverty. For example, a poverty scorecard may include

questions on the condition of the house itself, since poor quality houses tend to be

associated with poorer families. By using data from an existing national household

survey, each question can be allocated a certain number of points, and the scorecard

calibrated so that the total number of points for a household can be translated into the

probability that the household is living below the poverty line. The advantage of this

method for the microfinance institution is clear: the institution only needs to ask each

client a few straightforward questions, rather than doing a complete survey of their

household income or expenditure. For Fonkoze, there was an even greater benefit to be

gained from using a scorecard: that it could be designed to use the data which is already routinely collected in the *Kat Evalyasyon*.

As Schreiner *et al.* describe, a set of indicators which is suitable for use in a scorecard will:

- Be correlated strongly with poverty status, both in the past and future.
- Appear in a national household survey, allowing linkage to an absolute poverty line.
- Be capable of being collected without embarrassing clients or staff, and be likely to elicit truthful, verifiable responses.
- Take different values across clients.
- Take different values for a single client over time, as poverty status changes.

Fonkoze found that many of the questions already used in the *Kat Evalyasyon* fulfilled these criteria, and so could be analysed by means of a poverty scorecard.

This paper describes the process of constructing a poverty scorecard, in order to benchmark the *Kat Evalyasyon* data against a poverty line. This is not an attempt to develop an optimal poverty scorecard, as described in Schreiner *et al.* (2005) and Schreiner (2006a, 2006b, 2006c), but instead restricts itself to the data which is already available to Fonkoze. Indeed, since this work was finished, Schreiner (2006d) has produced an optimal scorecard for Fonkoze's use. Schreiner's scorecard has greater accuracy than the one presented in this paper – but it will require Fonkoze to collect new variables, and so cannot be used for analysis with existing data.

The dataset and poverty line

In order to calibrate a poverty scorecard for a particular country, it is necessary to use data on the incidence of poverty, derived from an existing national household survey. The Living Standards Measurement Surveys (LSMS) conducted by the World Bank are the best such surveys. In the case of Haiti, no LSMS survey exists, but a wide-ranging survey of 7000 households, known as the *Enquête sur les conditions de vie en Haïti* (ECVH, or Haiti Living Conditions Survey), was conducted in 2001. The survey collected data on household income as well as many other variables – but not comprehensive data on household consumption expenditure – and the dataset includes a calculation of the total income of each household in the survey. As a per-capita figure, this income level can be compared to the poverty line.

The US legislation makes two alternative definitions of extreme poverty: relating it either to a poverty line defined by national government, or using the standard $1-a-day measure (AMAP 2004). In the absence of a national poverty line for Haiti, the $1-a-day measure will be used. This extreme poverty line is defined by convention as $1.08 in 1993 US dollars, inflated to present-day US dollar values, and then converted to local currency at purchasing power parity (PPP) (Chen & Ravallion 2000). The $1-a-day extreme poverty line translates into a per capita poverty line of 2757 Haitian gourdes per year in 2000. Using this line with the ECVH data gives the result that 77% of the Haitian population in 2001 were living on income of less than $2 per day, and 56% of the population were living on less than $1 per day (Sletten and Egset 2004).

It is important to note that this poverty line is to some extent arbitrary. Even accepting the conventional definition of $1 per day, the calculation of PPP figures is

controversial, and the World Bank's official figure can be debated. In the absence of any alternative data for PPP or of an alternative poverty line, this analysis will use the official figures. But this does make comparisons of poverty between countries dubious: international comparisons of figures for poverty outreach, even when both are based on the $1-a-day line, should be treated with caution.

While the EVCH dataset was the best available for Fonkoze's use, there are a number of issues which have to be considered during the scorecard design process:

- Consumption measures of welfare are generally preferred to income measures (including by USAID in interpreting the US Senate's definition of poverty: see the Footnote 1 to AMAP 2004). There are two reasons for this: firstly, data on household consumption usually warrant more confidence than those on household income, and secondly, households tend to 'smooth' their consumption over time, making it less subject to fluctuations than income. A poverty line of $1-a-day measured in income terms is not necessarily equivalent to $1-a-day measured in consumption terms – and the latter is a more generally accepted standard of measurement. Unfortunately, in Fonkoze's case, only income data were available.

- The $1-a-day poverty line takes no account of price differences within Haiti. As a result of poor infrastructure, prices can vary considerably around the country. Using a poverty measure which does not take account of these differences will cause poverty levels to be underestimated in those areas where the cost of living is relatively high, and vice versa (Sletten & Egset 2004).

- The per capita income level of each household is determined by dividing total household income by the number of members of the household. This means that no account is taken of economies of scale within households (it is likely to be cheaper per head to cook for eight people than for two), or of differential levels of consumption between children and adults (children do not need to eat as much as adults). This effect will tend to overstate the effect of poverty on large households, particularly those with large numbers of children (Pedersen & Lockwood 2001 and Sletten & Egset 2004).

- The process assumes that patterns of household consumption and expenditure have not changed since the ECVH survey was conducted in 2001. Variables for which behaviour is likely to have changed since then were excluded – the most obvious example being that for mobile phone ownership.

Each of these factors introduce an unknown degree of inaccuracy into the process. It will be important to bear in mind these caveats when we come to analyse the results which the scorecard produces, so as to avoid putting undue weight on the accuracy of the results. There is no evidence, however, that any of these factors are so important as to undermine the validity of the process altogether.

Constructing a scorecard

Many of the questions which Fonkoze routinely asks its clients in the *Kat Evalyasyon* were the same as or similar to questions asked to participants in the ECVH survey. In some cases, further approximations had to be made. For example, the *Kat Evalyasyon* does not ask individually about ownership of a radio and television, but

instead a general question about ownership of electrical goods. For use with the ECVH data, it was therefore assumed that the small number of households who reported owning a television (or more expensive electrical goods, such as a refrigerator) also own a radio. Several other assumptions and approximations had to be made. In some cases, questions from the *Kat Evalyasyon* which may have a strong link to household poverty could not be used in the scorecard because they did not correlate closely to questions in the ECVH survey.

Each of the *Kat Evalyasyon* questions was then tested with the EVCH data, to check that they could be used to predict a household's poverty status. Surprisingly, three of the questions from the *Kat Evalyasyon* were found not to be indicators of extreme poverty at all (or, at least, not using our income-based definition of poverty): the ownership of property, access to agricultural land, and the marital status of the female household head. For example, those clients who do not own their house are no more likely to be extremely poor than those who do. While these three variables are still of interest in their own right (such as for looking at changes in asset ownership of clients), they are not of use in predicting income poverty.

This process resulted in 12 questions from the *Kat Evalyasyon* which were suitable for use in the scorecard. The 12 questions and their responses are listed in the first two columns of Table 1. The final column of Table 1 lists the points which are allocated to each of the responses. Some of the questions are necessarily stronger indicators for poverty than others, so some of the questions are assigned more weight (a greater number of points) than others. Still following the process described by Schreiner *et al.* (2005), a statistical model was used to find the optimal weights for each of the

questions – that is, the number of points to apply to each question which maximizes the scorecard's accuracy. For convenience, these weights were then rounded so as to make the scorecard add up to a maximum possible score of 100.

Each Fonkoze client, then, is assigned a score between 0 and 100, depending on their responses to these 12 questions. A score, however, is not of interest in itself: instead, we need to be able to convert a score into a probability that the household is or is not living in extreme poverty. This is where the national survey data comes in: for each household in the dataset, their score out of 100 was calculated, and compared with whether the household *actually* (according to the ECVH data) lies below the extreme poverty line or not. The results are shown in Table 2.

Table 2 serves two purposes. Firstly, it demonstrates that the scorecard does, in fact, generally associate low scores to households with a high likelihood of being extremely poor, and high scores with households which are less likely to be extremely poor. For example, of the 135 households with scores in the range 11 to 15, a total of 121 (89 per cent) were below the extreme poverty line; whereas, for households with scores between 61 and 62, only 13 out of 109 (12 per cent) are extremely poor.

The second use of Table 2 is in calibrating the scorecard. We can use the final column of Table 2 to look up the poverty likelihood which is equivalent to any given score. For example, if we find a Fonkoze client who has a score of 14 on the scorecard, then we see from Table 2 that the probability that that client is extremely poor is 89 per cent.

Schreiner *et al.* (2005) use a 'power curve' to give a visual indication of the accuracy of their scorecard. An equivalent power curve for this scorecard is shown in

Figure 1. The higher of the two curves plots the proportion of poor households with a given score or less against the share of all households with that score or less. The closer this curve approaches the top and left borders, the higher the power of the scorecard to identify poor households. Similarly, the closer the 'non-poor' curve approaches the bottom and right borders, the higher the power of the scorecard to identify non-poor households. For reference, the broken curve in Figure 1 represents a simple scorecard using the same 12 questions as ours, but without statistical weights applied: this power curve lies inside that for the full (weighted) scorecard, showing that the weighted scorecard is more accurate at identifying poor and non-poor households.

The area under the "poor" curve gives a measure of the accuracy of the scorecard, with a higher value for the area giving higher accuracy. The area under the curve for this scorecard is 0.73. For comparison, the optimal scorecard for Haiti developed by Schreiner (2006d) has an area under its power curve of 0.77 – showing that Schreiner's scorecard provides a small increase in accuracy over this one.

Table 1: Poverty scorecard

Indicator	Value	Score
How many people live in the household?	3 or fewer	13
	4 to 6	5
	7 or more	0
How many rooms are there in the house?	3 or fewer	0
	4 or more	3
Material used for the walls of the house	Concrete, bricks, blocks or rocks	3
	Earth, wood, or any other material	0
Material used for the roof of the house	Concrete	14
	Iron	7
	Straw, thatch, palm leaves, or any other material	0
Material used for the floor of the house	Earth	0
	Concrete, wood, ceramic, or any other material	3
Does the house have toilet facilities, either inside or outside the building?	Yes	3
	No	0
Is there a bed in the household? (mattress, box, iron-made)	Yes	4
	No	0
Does anyone in the household own a radio or cassette player?	Yes	6
	No	0
Does anyone in the household own a television?	Yes	12
	No	0
Has any member of the household received money transfers from relatives or other individuals abroad within the last 12 months?	Yes	5
	No	0
Do all of the children in the household aged 6-15 years currently attend school?	Yes	3
	No	0
	No children of this age	7
Can the household afford to eat meat, chicken or fish at least 3 times a week?	Yes	12
	No	0

Table 2: Distribution of households by score

Score	Number of cases		Likelihood poor ($1-a-day line)
	Poor	All	
0–5	0	0	–
6–10	32	33	97%
11–15	121	135	89%
15–20	175	211	83%
21–25	317	430	74%
26–30	415	637	65%
31–35	407	684	60%
36–40	272	563	48%
41–45	245	596	41%
46–50	163	441	37%
51–55	49	231	21%
56–60	44	227	19%
61–65	13	109	12%
66–70	5	46	12%
71–80	3	13	26%
81–100	0	0	–
Total	**4353**	**2262**	**54%**

Figure 1: Power curve, giving an indication of the accuracy of the scorecard
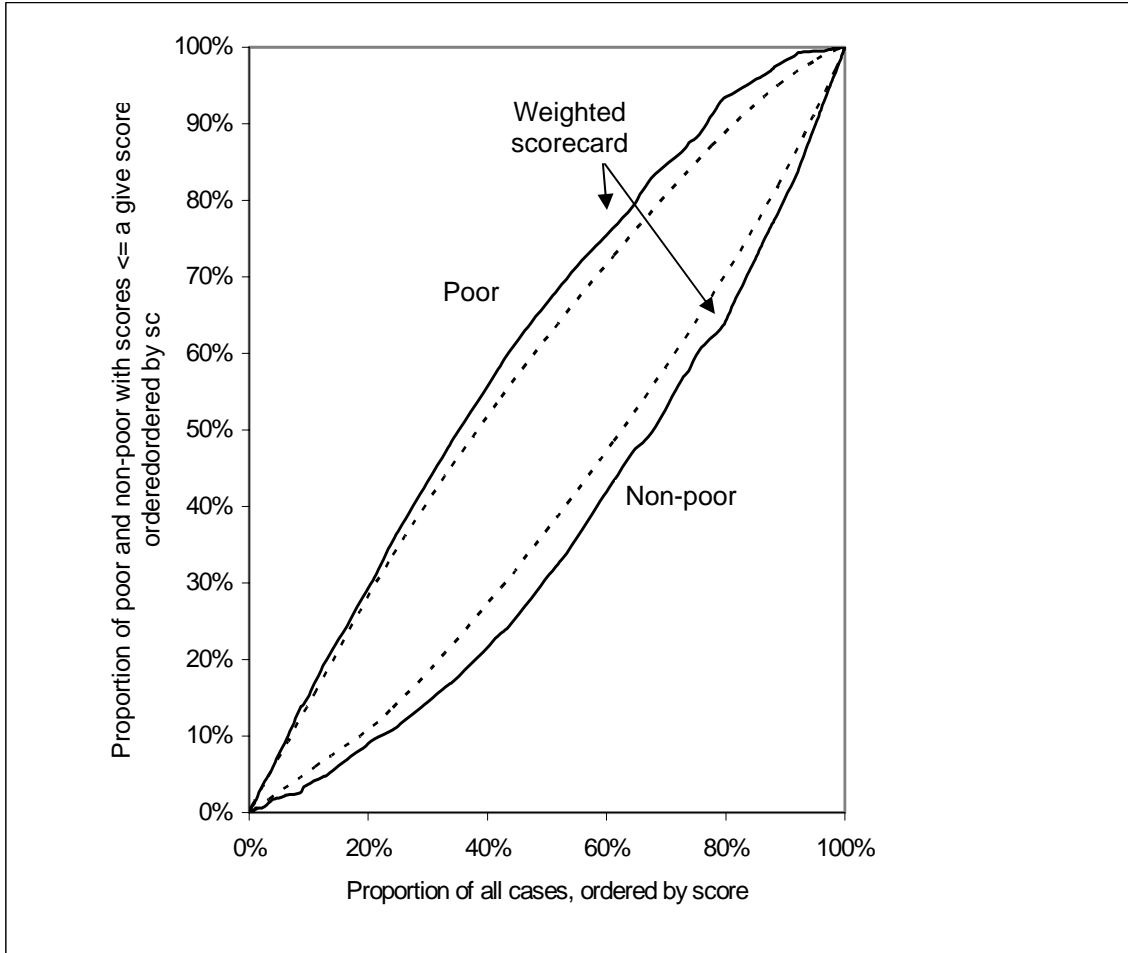
<u>**Analysis of Fonkoze clients**</u>

The weighted scorecard can now be used to perform some analysis of Fonkoze's *Kat Evalyasyon* data. Before looking at the results, it is worth reiterating the various assumptions which we have highlighted in the course of developing the scorecard:

- We calibrated the scorecard using income data, which is a poor substitute for consumption data. This has probably reduced the accuracy of the process, but we do not know to what extent.

- Our scorecard probably overstates (to an unknown degree) the incidence of poverty among large households and those with many children.

- The questions in the *Kat Evalyasyon* are not all exactly equivalent to the questions asked in the ECVH survey, so various simplifying assumptions had to be made.

- The whole process rest on the assumption that behaviour has not changed since the EVCH survey was conducted in 2001.

With these caveats in mind, we can use the data collected by Fonkoze to produce estimates for the proportion of Fonkoze clients who are below the $1-a-day extreme poverty line. The extreme poverty rates in Table 3 are based on *Kat Evalyasyon* surveys of a representative sample of 250 clients in three Fonkoze branches in the north-east of Haiti, carried out between March and June 2006.

The overall extreme poverty rate across the three branches is 54%. This compares to the proportion of households in north-east Haiti who are below this poverty line (according to the national survey data) of 81%. It seems clear that Fonkoze clients are on average less likely to be extremely poor than in the overall population. Whether

this can be attributed to a beneficial effect of Fonkoze's program is doubtful: it applies

equally to clients who have been with Fonkoze only for one year.

In fact, Fonkoze has already recognized that its solidarity credit program is not

suitable for some of the very poorest people in Haiti. The data seem to support the

conclusion that many of the poorest people in Haiti are unable to fulfil the conditions for

entry into the solidarity credit program (including a one-time membership fee of $6.25

and a compulsory savings requirement of 15% of the loan value). In response to this

observation, Fonkoze is currently testing two new loan products for those who are not

able to meet these conditions. These new products will have the aim of improving clients'

financial security to the point where they are able to participate in the solidarity loan

program.

The results in Table 3 also demonstrate that clients of the Twoudinò branch have

a significantly lower rate of extreme poverty than those of the other two branches in the

survey. A possible explanation for this is that, as a new branch, Twoudinò has tended to

recruit urban clients, who are initially easier to find than rural clients – and who are also

less likely to be extremely poor. If this is the case, then it now appears to be changing: the

extreme poverty rate of new clients recruited by the Twoudinò branch since March 2006

is 53%, and most of these new clients come from poorer rural areas. Over time, we

therefore expect the poverty rate among clients of the Twoudinò branch to approach that

of the other two branches.

The data do not show any pattern of a change in extreme poverty rates across the

credit cycles: there is no clear relationship between poverty likelihood and length of time

clients have been participating in the Fonkoze program. However, one important

advantage of the scorecard is that it can be used to track changes over time. Fonkoze intends to re-survey the same sample of clients again at intervals of 12 months, and to recalculate each client's likelihood of being below the extreme poverty line. This will enable Fonkoze to judge whether and at what rate its clients are moving out of extreme poverty.

Of course, measuring such changes over time is not the same as – and should not be confused with – assessing the impact due to Fonkoze's program. What this scorecard cannot do is distinguish between changes in clients' wellbeing which are due to Fonkoze, and those due to external causes. For example, if the economy of Haiti were to grow in the next three years and a proportion of the population were thereby lifted out of extreme poverty, it is likely that some Fonkoze clients would be among them; it would be wrong however, to attribute the improvement in their lives (or to attribute it wholly) to Fonkoze's program. This problem may arise with any attempt to study impact, but perhaps it is all the more important to bear in mind when armed with a tool, such as this scorecard, which produces clear-cut and easily misquoted figures as its output.

Table 3: Estimates of proportions of clients in extreme poverty

Fonkoze branch	Credit cycle				Average
	Third	**Fifth**	**Seventh**	**Ninth**	
Fòlibète	59%	61%	57%	46%	59%
Twoudinò	39%	44%			40%
Wanament	53%	62%	54%	56%	56%
Average	**50%**	**60%**	**55%**	**52%**	**54%**

Conclusion

The strength of the approach described in this paper is that it has allowed Fonkoze to use existing data to produce quantitative estimates of the level of extreme poverty among its clients. This is of benefit not only for compliance with USAID requirements, but it has already allowed useful comparisons of the poverty outreach of various branches.

This lesson could be applied to any microfinance institution which already routinely asks clients (or would be willing to begin asking them) a few simple questions on their living conditions, and which also can gain access to data from a national household survey of income or consumption. Measuring poverty status directly requires detailed and complicated surveying, in order to calculate each household's total income or consumption and decide whether it is above or below the poverty line. However, if this painstaking work has already been done in a national survey, then a microfinance institution does not need to go to the same lengths. A poverty scorecard makes estimation of a sophisticated piece of information – a household's poverty status – a matter of asking a few simple questions.

References

Accelerated Microenterprise Advancement Project (AMAP) (2004), 'Review of Poverty

Assessment Tools',

http://www.povertytools.org/Project_Documents/Review%20of%20Poverty%20Ass

essment%20Tools.pdf

Chen, Shaohua, and Martin Ravallion (2004), 'How Did the World's Poorest Fare in the

1990s?', World Bank Policy Research Working Paper 2409,

http://econ.worldbank.org/resource.php?type=5

Pedersen, Jon, and Kathryn Lockwood (2001), 'Determination of a Poverty Line for

Haiti', Fafo, http://www.fafo.no/ais/other/haiti/poverty/PoveryLineForHaiti.pdf

Schreiner, Mark, Michal Matul, Ewa Pawlak, and Sean Kline (2005), 'The Power of

Prizma's Poverty Scorecard: Lessons for Microfinance', Microfinance Risk

Management,

http://www.microfinance.com/English/Papers/Scoring_Poverty_in_BiH_Long.pdf

Schreiner, Mark (2006a), 'A Poverty Scorecard for Pakistan', Microfinance Risk

Management,

http://www.microfinance.com/English/Papers/Scoring_Poverty_Pakistan.pdf

Schreiner, Mark (2006b), 'A Poverty Scorecard for the Philippines', Microfinance Risk

Management,

http://www.microfinance.com/English/Papers/Scoring_Poverty_Philippines.pdf

Schreiner, Mark (2006c), 'A Poverty Scorecard for India', Microfinance Risk

Management,

http://www.microfinance.com/English/Papers/Scoring_Poverty_India.pdf

Schreiner, Mark (2006d), 'A Simple Poverty Scorecard for Haiti', Microfinance Risk

    Management,

    http://www.microfinance.com/English/Papers/Scoring_Poverty_Haiti.pdf

Sletten, Pål, and Willy Egset (2004), 'Poverty in Haiti', Fafo paper 2004:31,

    http://www.fafo.no/pub/rapp/755/755.pdf