A Comparison of Quantitative and Qualitative Poverty Targeting Methods in Vietnam*

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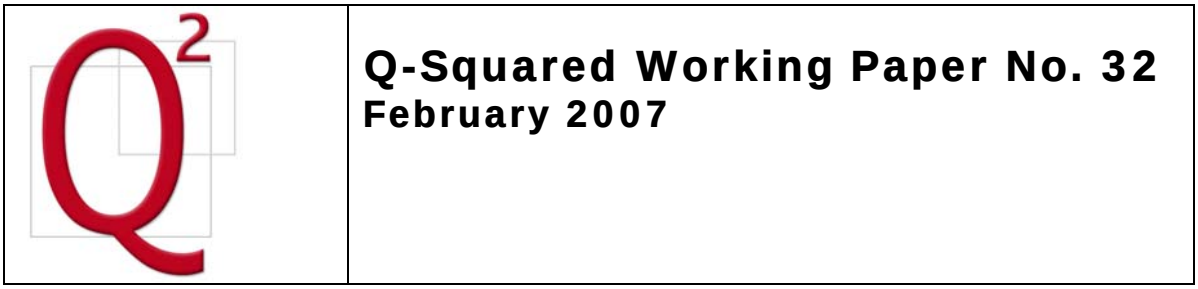

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1. Introduction

Targeting is seen as a key mechanism to make more resources available to the poor. It can secure the maximum poverty alleviation impact for a given amount of resources; conversely, it can allow achieving a given impact at the lowest cost to the budget. Provided, this is, that targeting methods are actually effective at identifying the poor.

In recent years, considerable effort has been devoted to the development of quantitative methods to measure poverty and target the poor. Those methods are based on the assessment of household income or expenditures, or on the identification of their proxies, using survey instruments. Because of their objective nature, these methods are supposedly more reliable. Widely used poverty indicators, such as the number of people "living on less than one dollar per day", are built on this approach. Not everybody agrees though. Some argue that critically important dimensions of poverty, such as vulnerability to shocks, lack of voice or stigma, are not easily measurable. And even for more measurable dimensions, such as income, expenditures or assets, surveys may only yield approximate results. More qualitative or subjective methods, applied locally, are favored by this camp. But the aggregation of qualitative indicators across communities is clearly problematic.

This paper contributes to the debate on the merits of alternative methods to measure poverty and target the poor by comparing their performance, at the household and commune levels, in the case of Vietnam. This country provides an especially interesting laboratory, as it has achieved one of the fastest reductions in poverty ever recorded based on quantitative methods. In 1993, the year of the first reliable household survey, 58 percent of the population had expenditures below the poverty line; by 2004, the proportion had declined to 20 percent. Thus almost two fifths of the population, the equivalent of more than 30 million people, were lifted out of poverty in barely more than a decade. The poverty line underlying these figures is the cost of a consumption bundle which includes food and non-food items according to the observed expenditure patterns of the poor, and secures an intake of 2,100 calories per person per day. The exact speed of the decline in poverty would vary if other definitions were used, but the accomplishment would certainly remain.

The speed of poverty reduction in Vietnam owes much to the rapid economic growth prompted by market-oriented reforms under the *Doi Moi* (renovation) process, since the late 1980s. But it also reflects a deliberate attempt by the authorities to keep development inclusive. The Vietnamese government was indeed a practitioner of "pro-poor growth" long before the phrase became fashionable. From land reform to the provision of social services, there was a determined effort to transfer resources to the poor. But effectively transferring resources to the poor requires knowing where they live and who they are. The traditional poverty measurement system used in Vietnam was based neither on internationally accepted quantitative methods nor on a modern qualitative approach. It was allegedly unreliable, if not directly vulnerable to manipulation. How come, then, that Vietnam was so successful at reducing poverty?

This paper compares the classification resulting from such traditional poverty measurement system to that from a range of more modern, quantitative and qualitative approaches. In the process, the paper contributes to the debate on the reliability of various poverty measurement methodologies, both quantitative and qualitative, and highlights the household characteristics that carry most weight in each of them. In finishing, the paper also draws some recommendations for the future of poverty measurement in Vietnam, proposing practical ways to combine the good performance of the traditional method at the local level with the strengths of modern quantitative methods at more aggregate levels.

Reliable household survey data of the type used by quantitative methods are available in Vietnam for 1993, 1998, 2002 and 2004. However, these data cannot support a fine targeting of the poor. The 1993 and 1998 Vietnam Living Standard Surveys (VLSS) were of high quality but had too small a sample to allow the estimation of poverty rates at regional or provincial levels, not to mention local levels (Paul Glewwe and Margaret Grosh, 1998). The 2002 and 2004 Vietnam Household Living Standards Survey (VHLSS) had a much bigger sample, but standard errors for provincial poverty rates remained large. In parallel, an effort was conducted to generate poverty rates at the level of districts, and even of large communes, under the form of detailed poverty maps (Nicholas Minot, 2000; Nicholas Minot and Bob Baulch, 2002). This effort relied on the application of a proxy-means method, involving the combination of data from the population census of 1999 and the 1998 VLSS. But the precision of small-area estimation is

controversial, because of potentially large prediction errors (Jesko Hentschel et al., 2000, and Chris Elbers et al., 2003).

When this study went to the field, however, poverty measurement in Vietnam was not based on household expenditure surveys. The Ministry of Labor, Invalids and Social Affairs (MOLISA), the only agency officially in charge of monitoring poverty until 2005, allegedly relies on a means-testing method to perform this task. Households are considered poor if their income per capita is lower than some benchmark. The latter is set through a consultative process, and does not involve the costing of any well-defined consumption bundle. A quick survey is in principle applied to poor and near-poor households to measure their income. But the method is not strictly followed in practice. Local-level assemblies actually debate (and often vote) on the poverty status of community members. While some consideration is given in these assemblies to the income benchmarks set up by MOLISA, the first-hand knowledge neighbors have of each other carries far more weight. The classification of households serves as the basis to compute poverty rates, which are in turn aggregated to higher levels, all the way up to a national poverty rate. However, the willingness of local and provincial authorities to showcase their performance, or simply to match the resources available for targeted programs with the alleged number of eligible beneficiaries, often influences the reported poverty rates.

This paper compares the classification of households resulting from actual household expenditures (as defined in the VHLSS), predicted household expenditures (as in proxy- means exercises and poverty maps), means testing (as supposedly done by MOLISA), the traditional classification of households by local authorities (as done in practice at the local level) and the self-reported status of households (a frequently used qualitative approach).

All these methods are in principle subject to criticism. Household expenditures are difficult to measure, especially as the economy becomes more diversified and the number of goods and services consumed vastly exceeds the number of items considered in survey questionnaires. Income is difficult to measure as well, except for salaries and government transfers, which are not that common among the poor and near-poor. Furthermore, the process of dividing total expenditures or total income among household members is subject to errors, as not all household members are alike and the consumption of some goods and services can be enjoyed by several of them simultaneously. Even if expenditures or income per capita could be

measured precisely, they would not capture the dynamic dimensions of poverty, such as being vulnerable to shocks; nor its social aspects, such as lacking voice or being subject to stigma. As for self-perception, it is intrinsically subjective, which limits the possibility to meaningfully make inter-personal comparisons, or to aggregate across households. And both the traditional classification by local authorities and self-assessments are subject to manipulation. The real issue, however, is not to identify the potential weaknesses of each method. It is rather to determine how similar or different their outcomes are in practice.

The benchmark against which all these methods are compared is the classification of households by poverty status resulting from participatory wealth-ranking exercises. Such exercises are part of a growing family of qualitative methods rooted in applied anthropology. Their goal is to enable local people to share and analyze their knowledge about their living conditions, with the assistance of outsiders who serve as facilitators (Robert Chambers, 1994). The extent to which facilitators should use a structured framework to elicit information and make it comparable is a matter of debate, and the overall comparability of results across communities is questionable. Still, there is evidence that wealth-ranking exercises are effective at stratifying households by socio-economic status (Alayne M. Adams et al., 1997).

Wealth-ranking exercises were conducted in 39 communes across Vietnam in the summer of 2003, as part of an effort to update the assessment of the country's poverty situation (World Bank, 2003). The location of those communes is reported in Figure 1. The wealth-ranking exercises were carried out with the help of Non-Government Organizations (NGOs) and research institutes with an in-depth knowledge of the local context. For this paper, a subset of participants in the wealth-ranking exercises was subsequently surveyed, with the aim of collecting information on the household characteristics considered by Vietnamese poverty maps, on household income as defined by MOLISA, on the actual classification of households by poverty status according to local authorities, and on self-perceptions of poverty.

The result is the availability of poverty data computed with a variety of methods for a total of 942 households. Admittedly, this cannot be considered a representative sample in statistical terms, as the selection of communes for the wealth-ranking exercises, and of localities within each commune, was not random. On the other hand, all households in each selected

locality (including unregistered migrants) were taken into account in the wealth-ranking exercises, and the follow-up survey was applied to a randomly selected sample of them.

This is certainly not the first study to compare the performance of different methods to measure poverty and target the poor. Within the approach based on household expenditures, a vast literature has been devoted to analyzing the sensitivity of poverty measures to changes in key assumptions. But in recent years, several authors have also conducted systematic comparisons across methods for various countries, including Vietnam. A non-exhaustive list of studies includes Harold Alderman (2002), Ravi Kanbur (2002), Michael Lokshin and Martin Ravallion (2002), Norbert R. Schady (2002), Bob Baulch and Eduardo Masset (2003), David E. Sahn and David Stifel (2003) and David Coady et al. (2004). However, the range of methods considered in this paper is broader. And the approach is slightly different, in that it uses the in-depth knowledge of households resulting from wealth-ranking exercises as a benchmark.

In this respect, and all proportions respected, this paper can be seen as an attempt to scale up the Palanpur study. Palanpur is a village in Northern India where statistical analysis was combined with first-hand knowledge about almost all households to gain a better understanding of the determinants and dynamics of poverty (Peter Lanjouw and Nicholas Stern, 1989 and 1991). The choice of Palanpur involved some arbitrariness too. But once this choice was made, detailed information was gathered on all of the households in the village, through researchers living in it for long spells over several years. The depth of the knowledge gained by the researchers who lived in Palanpur is, of course, difficult to match. But the NGOs and local research institutes involved in the wealth-ranking exercises used in this paper were chosen because of their familiarity with local conditions. Moreover, a significant effort was devoted to ensuring that they all used the same methodological approach (Carolyn Turk, 2003).

2. Targeting Methods

For brevity, the targeting methods considered in this paper are labeled as: 1) *household expenditure*, 2) *proxy means*, 3) *means testing*, 4) *local classification*, 5) *self-reporting* and 6) *wealth ranking*. The characteristics of these methods and their implementation in the case of

Vietnam are summarized in Table 1. The second column in the table briefly describes how poverty is computed in each of them. The third and fourth columns indicate which of these methods can be used at the household level, and which ones at the commune level. The last column lists the sources of data to be used in each case. The remaining of this section provides a more detailed description of the six methods considered.

Household expenditure. The questionnaire of the VHLSS contains a module with detailed information on households' expenditures. Responses to this module allow computing total consumption as well as food consumption. This information can be used to generate a poverty line, measuring the level of expenditure per capita (including food and non-food items) that is necessary to secure an intake of 2100 calories per day. The poverty status of household "i", P_i^H, is then determined as follows:

$$P_i^H = 1 \quad if \quad E_i < \overline{E}$$

$$P_i^H = 0 \quad otherwise$$

where E_i is expenditure per person in household "i", and $\overline{E}$ is a nation-wide poverty line adjusted so as to take into account differences in the prices of consumption goods across regions and over time (as household surveys are conducted over several months). The poverty rate of commune "k" can be computed by aggregating over the N households in that commune for which information on P_i^H is available:

$$P_k^C = \frac{1}{N} \cdot \left(\sum_{i=1}^{N} P_i^H \right)$$

Proxy means. This method focuses on a few, easily observable characteristics of households, which are supposed to be strongly correlated with poverty. Examples of those characteristics include the size and composition of the household, its type of housing, the educational attainment of its members and their occupations. The proxy-means method can be applied on a household-by-household basis, but it can also be used to produce poverty maps.

The latter combine the depth of household surveys with the wide coverage of population censuses. Household surveys like the VHLSS gather information not only on household expenditures but also on a range of other variables; population censuses do not ask about expenditures, but do include information on many key household characteristics. Poverty maps link these two statistical tools through three main steps**.** The first one involves identifying a set of variables which are common to a detailed household survey and a more-or-less contemporaneous population census. The second step is to estimate a functional relationship between the level of expenditures per capita and this common set of variables, using data from the household survey. In the third step, the estimated consumption function is used to predict the level of expenditures of each of the households in the population census.

The consumption function typically takes the form:

$$Log\ E_i = \beta^1 X_i^1 + \ldots + \beta^J X_i^J + \varepsilon_i$$

where X_i^j are characteristics of household "i", such as its size, composition, assets and the like, β^j is the impact of characteristic "j" on household expenditure per capita, and ε_i is a stochastic disturbance, reflecting the possibility that the actual expenditure of household "i" might be higher or lower than its characteristics imply. The estimated coefficients $\hat{\beta}^j$ are then used to predict the expenditure level of each of the households "i" covered by the population census:

$$\hat{E}_i = \exp\left(\hat{\beta}^1 X_i^1 + \ldots + \hat{\beta}^J X_i^J\right)$$

Based on the estimated household expenditure $\hat{E}_i$, the simplest approach to evaluate the poverty status of household "i", and the poverty rate of the commune level it belongs to, is to go through the same steps as in the previous method, using the same poverty line. In this respect, the proxy-means method is still part of the expenditure-based approach, but it is based on predicted rather actual household expenditures.

Means testing. The method allegedly used by MOLISA would fall into this category. In principle, this method relies on a small household survey including questions on assets and on income from a variety of sources. Income over all these sources is added up, divided by the household size, and compared to one of three poverty lines, depending on where the commune is located. When the field work for this paper was conducted, the poverty line for urban areas was 150,000 VND per person per month. It had been set at 100,000 VND for rural lowland areas, and at 80,000 VND for mountainous and remote areas, as well as for distant islands. Households with a monthly income per capita below 50,000 VND were considered "hungry" in all areas. Poverty rates were to be obtained as the fraction of the population below the poverty line.

Local classification. In practice, local officers do not follow the means-testing method of MOLISA by the book. The key to the targeting of poor households and the allocation of benefits at the local level actually relies on the operation of a customary institution: the *thon*. Each commune includes several villages or household clusters, here identified for brevity as *thon* (although they can have different names in different parts of the country). Each *thon* is led by a "village chief", or cluster leader, who is most often elected and tends to carry respect among his or her peers. The village chief's main task is to know the situation of the households in his or her *thon*. While this knowledge partly serves control purposes, such as identifying newcomers and reporting suspicious activities, it also involves the targeting of poor households for the allocation of whichever benefits are available.

Each *thon* thus compiles a list of "poor" and "hungry" households, with the latter being a sub-set of the former. This list is updated once or twice a year, when benefits such as education fee exemptions and health care cards are distributed. Households who are perceived as not poor may not participate in these assemblies, as they are unlikely to receive any benefit. Quite often, the resources available do not allow to allocate benefits to all those classified as poor. Discussions thus focus on who should be entitled to those benefits, and involve subjective assessments by other households more than income figures. MOLISA's means-testing methodology tends to be considered only when failing to reach consensus on whether a particular household should get the marginal benefit. On the other hand, there is a systematic exclusion of some households from the classification. Those who are not considered hard-working enough, or display allegedly irresponsible social behaviors, seldom receive any benefit

and may not even be listed as poor. Unregistered migrants are not entitled to benefits either, and generally do not participate in *thon* meetings. As an illustration, Figure 2 describes the process followed in one particular village in 2003. While the village is not necessarily representative, the process followed in it reflects the common practice.

Self-assessment. In this case, households are simply asked to declare their poverty status. No guidance is offered on the criteria on which this declaration should be based, thus ensuring that it is entirely subjective. While respondents should know about their income, expenditures, vulnerability to shocks and social status more than anyone else, their response is unlikely to involve a common poverty line or benchmark. Of all the methods considered, this is the most sensitive to the relative position of the household in a locality. Of two identical households, one living in a poor locality and the other in a rich one, the latter should be more inclined to declare itself as poor. And its subjective well-being is likely to be lower too. Therefore, the self-assessment method cannot be dismissed on the grounds that it includes a dose of subjectivity, because that dose clearly establishes a link with welfare, and poverty measurement basically aims at assessing household welfare.

The follow-up survey applied for this paper to households covered by the wealth-ranking exercises proposed four categories for the self-assessment of their poverty situation. Respondents could declare themselves very poor, poor, average or better-off. No additional information was provided on the meaning of these categories.

Wealth ranking. This methodology involves a collective judgment on the status of all households in a locality. In Vietnam, the locality typically overlaps with a *thon*. For the wealth-ranking exercises used in this paper, a substantial fraction of the households in the locality gathered to assess the poverty status of all households in it. Participants in these exercises were selected to as to include a balance of men and women, young and old, and poor and non-poor. Representatives from local authorities, often including the village chief, participated as well. Social workers from NGOs or local research institutions who are familiar with the area and the main issues affecting the livelihoods of the households in it served as facilitators. The classification of households was typically preceded by a group discussion aimed at identifying the characteristics of the poor. Subsequently, cards with the names of all the households in the *thon* were distributed to all participants, who were then requested to classify them in a series of

groups. In the final stage, the cases of households that had been classified differently by at least two participants were discussed by the entire group. The discussion aimed at understanding the reasons for the discordance and at seeking consensus regarding the appropriate classification.

At least four categories were considered in most wealth-ranking exercises: very poor, poor, average and better-off. In some communes these categories were further disaggregated, at the suggestion of the facilitators or the participants. Exceptionally, only three categories were considered: very poor, poor and non-poor. In a few cases, all households in the *thon* were also ranked, one by one, from richest to poorest.

3. Data

The choice of communes for the wealth-ranking exercises aimed at covering all the administrative regions of Vietnam. Each of these regions is relatively homogeneous from a socio-economic point of view, but there are considerable differences among them. Some are in the lowlands while others are in mountainous and remote areas; some have an almost entirely Kinh population while others have large ethnic minority populations; some are booming while others are lagging behind. Including communes from all regions thus ensures that a wide range of situations is reflected in the analysis. Within each region, the focus was on communes that had been (randomly) selected into the sample of the VHLSS 2002. Detailed expenditure data are available for an average of 10 households in each of those communes. The communes that were finally selected for the field work, 47 of them in all, were those where an NGO or a local research institution with a long-standing experience in the field could be identified to conduct the wealth-ranking exercises. The exercises were conducted in one to four *thon* within each of the 47 communes. Special attention was devoted to including unregistered migrants, if there were any, in the list of households to rank.

This paper relies on a follow-up survey of the households included in the wealth-ranking exercises. Unfortunately, in eight of the 47 communes, local authorities did not allow the enumerators to conduct the survey. In the 39 other communes, the households to be interviewed were randomly sampled from their wealth-ranking lists. The goal was to reach 10 households in

each *thon*. A total of 942 households participated in the follow-up survey. They were asked whether they had been classified as poor by local authorities, and whether they perceived themselves as poor. They were also asked about their income, with the questions phrased in the same terms as in the MOLISA questionnaire. Finally, the survey gathered data on the household characteristics used to construct the poverty map of Vietnam. Statistical analysis on the 2002 VHLSS allowed assessing the relationship between those characteristics and expenditures per capita, hence to predict expenditures for all the households included in the follow-up survey.

The only method that was not directly applied was the one based on the measurement of actual household expenditures. This is despite the fact that the selection of the communes aimed at maximizing the overlap between research sites and the 2002 VHLSS. Of the 39 communes where the follow-up survey could be conducted, 25 had been included in the VHLSS sample. Due to confidentiality considerations, it was not possible to match the households who answered the VHLSS questionnaire to those participating in the wealth-ranking exercises, or in the follow-up surveys. But given that the VHLSS only surveyed an average of 10 households per commune, the probability that these households would reside in the *thon* included in the wealth-ranking exercises was very low. Running a household expenditure questionnaire comparable to the VHLSS was ruled out due to time and budget constraints. It follows that the household expenditure method cannot be used to evaluate the poverty status of the 942 households considered in the analysis this paper. It can be used, however, to estimate the poverty headcount in 25 out of 39 communes included in the analysis.

4. Poverty Status and Poverty Rates

The estimated poverty rate among the households covered in the follow-up survey differs substantially depending on the method used. Whether the average poverty rate is computed at the household level or at the commune level does not modify the results much, as shown in Table 3. But the estimated poverty rate fluctuates from roughly 25 percent when applying the MOLISA method by the book, to 56 percent when relying on the households' self-assessment.

Methods based on expenditures per capita yield a poverty rate in the vicinity of 40 percent: slightly less (close to 37 percent) when using actual expenditures from the VHLSS 2002, or slightly more (close to 43 percent) when using predicted expenditures as in proxy means exercises. These figures suggest that on average the communes selected for the wealth-ranking exercises are relatively poor, by Vietnamese standards. At the national level, the poverty rate estimated using actual expenditures was 29 percent in 2002, and it would have presumably declined by several percentage points by the summer 2003, when the field work for this paper was conducted. Wealth-ranking exercises also yield an average poverty rate in the vicinity of 40 percent, thus providing an overall assessment of poverty that is consistent with the one resulting from methods based on expenditures.

More important than comparing averages across methods is to assess whether they yield a similar classification of households according to their poverty status and a similar ranking of communes based on their poverty rate. Table 4 reports the results of such assessment, with the top two panels referring to the classification of households according to their poverty status, and the bottom one to the classification of communes based on their poverty rates.

The last row of each panel is the most relevant one from the perspective of this paper, as it compares the poverty classification with the wealth-ranking benchmark. However, it can be argued that wealth-ranking exercises are not comparable across communes. Regardless of how much training the NGOs and local institutes in charge of the field work receive, there is a risk that two equally poor households will be classified differently in different communes, simply because of the different context in which the exercise is conducted.

To address this concern, correlations across methods at the household level are computed in two different ways in Table 4. The top panel is based on correlation coefficients computed within each commune, and only then averaged across communes. In the intermediate panel all 942 households from all 39 communes are pooled together in order to compute the correlation coefficients. But the numbers turn out to be very similar in the top two panels. This similarity suggests that wealth-ranking exercises lead to a consistent classification of households across communes, thus providing a reliable benchmark against which to compare the other methods.

The bottom panel reports correlation coefficients between the poverty rates of the 39 communes considered, using the same methods as before. In addition, for the 25 communes that

had been covered by the VHLSS 2002, correlations with poverty rates computed based on actual household expenditures per capita are reported as well.

At the household level, the methods whose outcomes are closest to the wealth-ranking benchmark are the households' self-assessment of their poverty status and the poverty classification by local officials. The corresponding correlation coefficients are in the range of 0.6036 to 0.6398, depending on whether they are computed within each commune or across households in all 39 communes. This result suggests that the traditional practice of local officials at the *thon* level might be effective at identifying the poor. It must be noted, however, that the correlation is substantially lower than one. The reluctance of local authorities to grant the poor household status to unregistered migrants and non-deserving households (those with socially reprehensible behaviors) could be one of the reasons for the less-than-perfect correlation with the wealth-ranking benchmark.

At the other end, proxy-means testing yields the classification which is farthest from the wealth-ranking benchmark. Depending on how it is computed, the corresponding correlation coefficient is 0.3167 or 0.2902. A strict application of MOLISA's means testing method also yields a classification of households which bears little resemblance with that resulting from wealth-ranking exercises (0.3941 or 0.3762). The correlation is even lower between MOLISA's means-testing method and the local classification (0.3413 or 0.3139). And this is despite the fact that the latter is in principle based on the former. This finding confirms that one of the main virtues of the means-testing method of Vietnam is actually that it is not applied by the book by local authorities.

When comparing communes based on their poverty rates, the method yielding results most similar to those derived from wealth-ranking exercises is the traditional classification by local authorities. At 0.7771, the corresponding correlation coefficient is substantially higher than for the second closest method, based on self-assessments (0.6184). These two methods resulted in a similar classification at the household level. However, the classification by local authorities survives aggregation to the commune level better than self-assessments do.

The outcomes of proxy-means testing and the wealth-ranking benchmark also become more similar when moving from the household level to the commune level. The corresponding correlation coefficient climbs from 0.3167 or 0.2902 in the top two panels of Table 4 to 0.5321

in the bottom panel. Poverty rates computed based on proxy-means testing are similar to those a highly disaggregated poverty map would yield. They are highly correlated, at the commune level, with those resulting from the measurement of household expenditures. The correlation coefficient reaches 0.6073 in the bottom panel of Table 4, despite the fact that the sets of households considered in both cases are unlikely to overlap. One of those sets comes from the follow-up survey, whereas the other is from the VHLSS. By contrast, poverty rates based on the traditional local classification are only weakly correlated, at the commune level, with those resulting from the measurement of expenditures (0.4029 in the bottom panel of Table 4). These results suggest that the reliability of proxy-means testing increases with the level of aggregation considered. Based on the comparison between the intermediate and bottom panels of Table 4, poverty rates based on proxy-means could well beat those based on the traditional classification from the district level upwards.

Meanwhile, at the commune level the means-testing method allegedly used by MOLISA yields results which are quite dissimilar from those of wealth-ranking benchmark. The correlation coefficient between the resulting poverty rates and those from wealth-ranking exercises (0.2804) is not even statistically significant. This result casts doubts of the reliability of MOLISA's means-testing method. But this is a potential criticism of what MOLISA says it does, not of what its local officials actually do.

5. Poverty Correlates

As the targeting methods considered in this paper yield different household classifications by poverty status, it is worth exploring whether their differences can be traced back to specific household characteristics. Identifying which characteristics are more heavily emphasized by each method would allow reconciling the differences between their outcomes. Unfortunately, it is difficult to link the poverty status to any well-defined set of household characteristics, or to attribute the gap in classifications between two methods to easily observable indicators.

The similarity in household characteristic across methods is revealed by Table 5, which reports the average characteristics of households classified as poor in each case. All of the household characteristics covered by the follow-up survey are considered for the calculation, with their averages computed after pooling poor households from all communes. Those characteristics whose average differs from the wealth-ranking benchmark by a statistically significant margin are highlighted (the analysis is based on an unconditional comparison of means).

There are no statistically significant differences in the household characteristics of the poor between the local classification and wealth-ranking exercises. And only one location variable (living in the North-East Uplands) appears to be statistically significant in the case of the self-assessment method. Gaps are more numerous between quantitative methods and wealth-ranking exercises. In particular, several of the location variables are statistically different from the benchmark. Other differences refer to housing. This is especially so in the case of proxy-means testing, which probably over-emphasizes housing features such as having an electricity connection or a flush toilet. Compared to the other methods, proxy-means testing also seems to give more prominence to the presence of large numbers of children in the household.

Another way to identify the household characteristics more closely associated with poverty is to run poverty profiles for each of the methods. The profiles in Table 6 are based on Probit regressions over the 942 households in the follow-up survey. The poverty status of the household is the dependent variable; all of the household characteristics for which information is available are entered as explanatory variables. Only two of those characteristics are significantly associated with poverty across all methods: having more children and not having a TV set. There is, however, a set of household characteristics which appears to be relevant across most methods. Households whose head has completed lower secondary or technical education, which have a relatively large area of semi-permanent housing, which are equipped with a flush toilet and a radio, and live in the North-East Uplands, are less likely to be classified as poor, regardless of the method used. Those who live in the South-East region are less likely to be considered poor. With the exception of these half-dozen household characteristics, all the rest appear to matter for a couple of methods only.

The difficulty to trace the poverty status back to specific household characteristics is further emphasized when poverty profiles are expanded so as include the benchmark classification among their explanatory variables. In Table 7, the poverty status of the household according to wealth-ranking exercises is added to the list of explanatory variables. Not surprisingly, this benchmark classification enters the profiles with a highly significant coefficient, across all methods. But the coefficient is quite low: less than a half in the case of the traditional local classification, barely more than a third for the self-assessment method. And these are the two methods whose outcome is closest to that of the wealth-ranking exercises. The coefficient is small, in absolute terms, in the case of the two quantitative methods.

Not surprisingly, given the limited predictive power of the classification based on wealth-ranking exercises, a large number of household characteristics enter these expanded poverty profiles with statistically significant coefficients. Out of a total of 35 characteristics considered, 11 are significant in the expanded poverty profile for the means-testing method, 13 for the self-assessment method, and a staggering 25 for the proxy-means testing method. Such multiplicity of determinants makes it difficult to attribute the gap with the benchmark classification to any narrowly-defined set of household characteristics.

Only in the case of the local classification (the method whose outcome is closest to the benchmark) does the number of statistically significant explanatory variables decline. Compared to wealth-ranking exercises, households with an electricity connection, a TV or a radio are less likely to be considered poor by local authorities. Other things equal, those living in the North Central Coast or in the South East region are more likely to be considered poor. As also are those with a larger share of women.

6. Conclusion

The traditional approach used to identify poor households in Vietnam is not based on any modern targeting method, quantitative or qualitative. And yet, it turns out to be remarkably effective at the household and commune levels, in the sense of yielding a classification that is not too different from a modern wealth-ranking exercise. Only the self-assessment method matches this performance at the household level, but it does not do so well at the commune level. And the self-assessment method cannot be used to allocate resources anyway, because it is subject to manipulation. The good performance of the local classification method at the household and commune levels is at odds with the perception that it is outdated and unreliable. Such good performance shows that local authorities do have a good knowledge of the households in their clusters, and do care about their well-being. It also contributes to explaining why Vietnam has managed to keep growth inclusive. For instance, it has been shown that the distribution of land to rural households, at the beginning of *Doi Moi*, was done on a remarkably egalitarian basis (Martin Ravallion and Dominique van de Walle, 2004). The egalitarian nature of the process probably owes much to the effective working of collective decision-making processes at the *thon* level. Vietnam's effective targeting of the poor by village chiefs and village assemblies also reflects the strength of local-level institutions.

Quantitative methods, on the other hand, have a much less compelling performance at the household level. Admittedly, a careful assessment of expenditures per capita could not be conducted on a household-by-household basis. But such assessment is too expensive to serve as a tool for fine targeting. As for proxy-means testing, despite being based on a rigorous estimation of consumption functions, it yields the lowest correlation of all with the classification resulting from wealth-ranking exercises. This finding resonates with common reservations about small-area estimation, hence about the use of highly disaggregated poverty maps. The means-testing method supposedly applied by MOLISA does better than proxy-means testing, despite being more ad hoc in its methodology. But the difference remains minor, and the MOLISA method, if applied by the book, can be considered unreliable too. This less-than-stellar performance of quantitative methods is not surprising, given the difficulty to associate poverty with any well-defined set of household characteristics.

Interestingly, the performance of proxy-means testing improves substantially when moving up the aggregation ladder. The traditional classification method used in Vietnam is

clearly the best performer at the commune level. But this is when comparing with poverty rates from wealth-ranking exercises. If poverty rates based on household expenditures are used instead, proxy-means testing outperforms the traditional local classification. And it would probably do better at higher levels of aggregation. The correlation would probably increase even further if the consumption function underlying the proxy-means method was to become more elaborate, and include household cluster characteristics among the predictors of expenditures at the household level. And it is bound to become even higher when moving "up" in terms of aggregation, to district and province levels.

The traditional classification used at the local level, by contrast, is bound to perform less well at higher levels of aggregation. Village chiefs can effectively rank the households they deal with, but their views on where to set the poverty line are probably idiosyncratic. As for MOLISA's attempt to aggregate poverty rates based on a means-testing method, it yields clearly unreliable results. Already at the commune level, the resulting poverty rate is uncorrelated with the one resulting from wealth-ranking exercises. And it is only weakly correlated with poverty rates estimated based on household expenditures per capita.

These findings have potentially important policy implications. *Doi Moi* reforms have transformed Vietnam into a highly decentralized country, from a budgetary perspective. Meanwhile, increased integration with the global economy is bound to exacerbate regional disparities. Areas with easy access to infrastructure and important agglomeration externalities are expected to grow rapidly; more remote and less densely populated areas may increasingly lag behind. A widening gap between booming hubs around Ho Chi Minh City or in the North-East golden triangle and the rest of the country can be expected. The combination of increased heterogeneity and budgetary decentralization calls for an effective mechanism to channel resources from poor to rich areas, and this in turn requires that effective targeting mechanisms be put in place, all the way down from provinces to households.

Based on the findings of this paper, for targeting and poverty measurement to be effective they need to combine the strengths of quantitative targeting methods at aggregate levels with those of traditional classification methods at the local level. Fortunately, this is the direction in which the government of Vietnam is currently moving. The sample of the VHLSS is large enough to compute provincial poverty rates based on household expenditures per capita with

acceptable margins of error. These poverty rates, produced by the General Statistics Office, are to be used from 2007 onwards as one of the key indicators to determine the equalization grants from the central budget to the provinces, as well as the provincial allocation for capital investment. Following the same logic, provincial governments could in turn use poverty maps (based on proxy-means testing) to allocate resources further down, to districts and communes. Finally, the concrete allocation of benefits to households could be done by local authorities, using the traditional classification method. Reliance on quantitative methods at higher levels of aggregation would ensure that resources available are commensurate with needs. Reliance on a tested qualitative method like the one traditionally used in Vietnam would ensure that poorer households get a larger share of whatever resources are available.

However, this proposed combination of quantitative and qualitative methods at higher and lower aggregation levels respectively leaves an uncomfortably gray area in between. While proxy-means testing performs relatively well at the commune level, the analysis in this paper also shows that there is considerable room for improvement. This calls for a better specification of the underlying consumption functions, probably involving the use of information not only on each household, but also on the household cluster it lives in. Moreover, Vietnam is experiencing a rapid rural-urban migration process. So rapid that population censuses become quickly outdated. The estimation of poverty rates by locality will be misleading if migration is not adequately taken into account. Upgrading poverty maps and finding reliable ways to update them in between population censuses is thus a priority.

Last but not least, the proposed combination of different targeting methods could generate confusion among policy makers and the public at large. The measurement of household expenditures per capita and proxy-means testing should yield similar results, provided that the underlying consumption function is well-estimated and appropriately calibrated. But the aggregation of poverty rates based on the traditional local classification to the commune and district level will yield results which are generally different from those from proxy-means testing. Such gap in poverty rates may in turn lead to disagreements as to how to allocate resources in this gray, intermediate area. To be workable in practice, a combination of quantitative and qualitative methods probably requires a very clear political decision as to which

method is valid at which level of aggregation. Researchers, on the other hand, may have much to learn from the gaps in poverty rates across methods.

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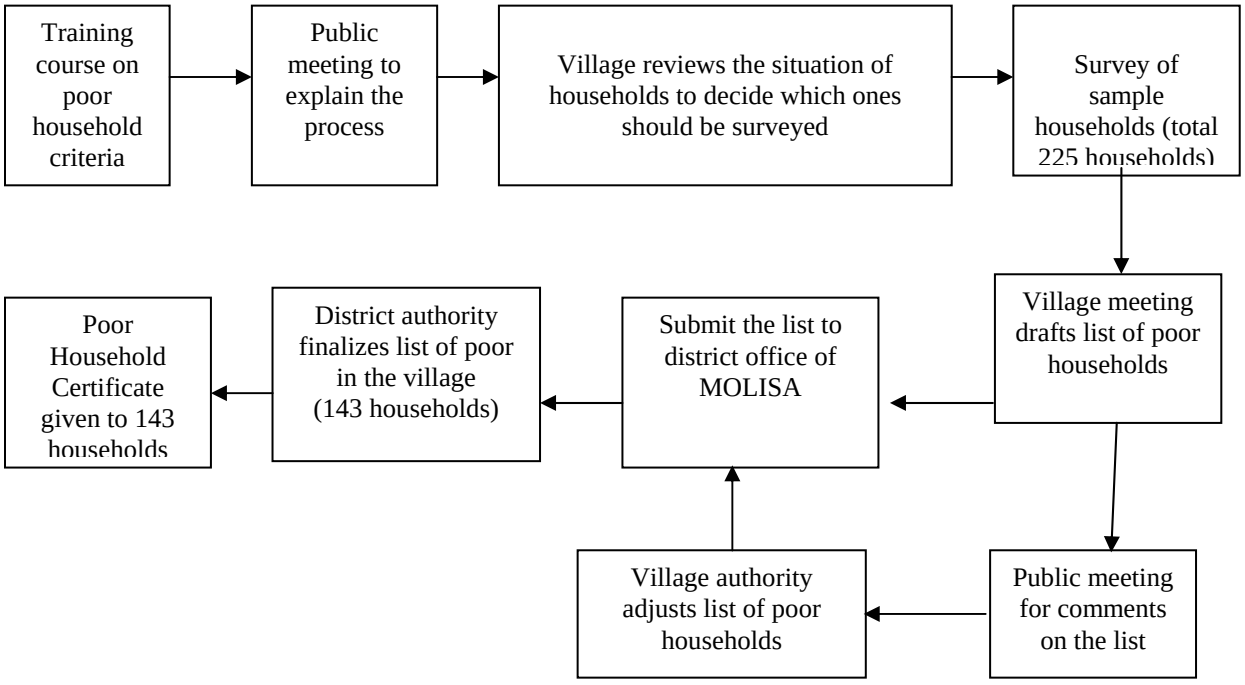
Figure 1

Communes Included in the Analysis

Figure 2

Identification of Poor Households

in Linh Thuong Village, Quang Tri Province



Source: Adapted from World Bank, 2003.

Table 1

Alternative Targeting Methods in 39 Communes

Label	Assess household poverty status based on	Can be used at level of		Data sources
		Commune	Household	
Household expenditure	Actual household expenditures per capita, as measured in the expenditure module of a household survey, and a poverty line associated with an intake of 2100 calories per day.	Yes for VHLSS communes	No, due to limited overlap with the selected *thon* and confidentiality	VHLSS 2002
Proxy means	Predicted household expenditures per capita, with the prediction relying on observable correlates, and a poverty line associated with an intake of 2100 calories per day.	Yes	Yes	VHLSS 2002 and follow-up survey
Means Testing	Reported income, and the poverty lines set up by MOLISA for urban, rural and mountainous areas.	Yes	Yes	Follow-up survey
Local classification	Actual classification of households by poverty status, according to local authorities.	Yes	Yes	Follow-up survey
Self-assessment	Self-declared poverty status, according to choices offered in a questionnaire.	Yes	Yes	Follow-up survey
Wealth ranking	Poverty classification by local households with the assistance of outsider facilitators with good local knowledge.	Yes	Yes	Wealth-ranking exercises

Table 2

Households Covered in each Commune

Province	Commune	2002 VHLSS	Wealth-ranking	Follow-up survey
Hai Duong	Nam Trung	5	231	30
	Nam Sach	5	163	30
Quang Ngai	Son Cao		99	20
	Son Ba		102	20
	Nghia Tho		92	20
	Nghia An	25	98	20
Dong Thap	Thanh Loi	25	160	28
	Phu Tho	5	160	28
	Phu Hiep	25	160	28
Quang Tri	Gio Thanh		158	24
	Linh Thuong		79	20
	Hai Son	5	146	20
	Hai An	5	272	20
Nghe An	Nghi Thai	5	100	28
	Tam Dinh	5	186	29
Ninh Thuan	Phuoc Hai		258	30
	Phuoc Dinh		265	30
	My Son	5	169	20
	Luong Son	25	223	20
Ha Giang	Cao Bo	5	100	25
	Thuan Hoa	5	158	32
Lao Cai	Ta Gia Khau		66	27
	Pha Long		48	16
	Ban Cam		73	24
	Phong Nien		139	32
HCMC	Ward 4	25	153	21
	Ward 5		200	20
	Tan Tao		132	20
	An Lac Township		254	22
Ha Tay	Lien Ha	25	207	20
	Tho An	5	260	20
	Phuc Lam	25	333	20
	Te Tieu	4	307	21
Dak Lak	Ea Tam town	5	158	24
	Eaheo	5	119	26
	Ea Ral	5	99	25
Ben Tre	Thanh Thoi	5	160	23
	Thoi Thanh	5	161	29
	My Hung	5	160	30
Total		264	6408	942

Table 3

Poverty Rates by Targeting Method

	Average across 942 households		Average across 39 communes	
Method	Poor	Non-poor	Poor	Non-poor
Household expenditure			36.5	63.5
Proxy means	42.5	57.5	42.8	57.2
Means testing	25.1	74.9	24.6	75.4
Local classification	31.3	68.7	31.5	68.5
Self-assessment	56.1	43.9	56.1	43.9
Wealth ranking	39.5	60.5	39.5	60.5

Table 4

Correlations between Poverty Status across Methods

At the household level, average across communes	Household expenditures	Proxy means	Means testing	Local classification	Self-assessment	Wealth ranking
Household expenditures						
Proxy means		1				
Means testing		0.2631	1			
Local classification		0.2859	0.3413	1		
Self-assessment		0.2755	0.4813	0.6224	1	
Wealth ranking		0.3167	0.3941	0.6398	0.6112	1
At the household level, all communes together	**Household expenditures**	**Proxy means**	**Means testing**	**Local classification**	**Self-assessment**	**Wealth ranking**
Household expenditures						
Proxy means		1				
Means testing		0.4545 **	1			
Local classification		0.2846 **	0.3139 **	1		
Self-assessment		0.3203 **	0.4326 **	0.5911 **	1	
Wealth ranking		0.2902 **	0.3762 **	0.6036 **	0.6295 **	1
At the commune level	**Household expenditures**	**Proxy means**	**Means testing**	**Local classification**	**Self-assessment**	**Wealth ranking**
Household expenditures	1					
Proxy means	0.6073 **	1				
Means testing	0.4059 *	0.6430 **	1			
Local classification	0.4029 *	0.4147 **	0.2147	1		
Self-assessment	0.3784	0.7079 **	0.6052 **	0.5726 **	1	
Wealth ranking	0.4616 *	0.5321 **	0.2804	0.7771 **	0.6184 **	1

Note: In the top two panels, the poverty status is equal to one for households classified as poor and equal to zero otherwise. In the lower panel, the poverty rate of the commune is used instead. Significant correlation coefficients at the five and one percent significance levels are indicated by one and two asterisks respectively. The level of significance is not indicated in the top panel because the figures are averages across communes.

Table 5

Average Characteristics of the Poor across Methods

Characteristic	Proxy means	Means testing	Local classification	Self-assessment	Wealth ranking
Household size	5.650	5.144	4.896	4.976	4.860
Share of 60 years and older	0.082	0.101	0.113	0.100	0.104
Share of 15 years and younger	0.409 ***	0.372	0.358	0.350	0.358
Share of women	0.522	0.535	0.551	0.531	0.533
Ethnic minority head	0.695	0.661	0.468	0.477	0.470
Male head	0.853	0.798	0.712	0.764	0.738
Head completed primary school	0.225	0.242	0.268	0.250	0.261
Head completed lower secondary	0.123	0.110	0.104	0.135	0.129
Head completed upper secondary	0.015	0.030	0.018	0.020	0.024
Head completed technical school	0.013	0.000	0.000	0.004	0.003
Head completed higher education	0.000	0.004	0.000	0.002	0.000
No spouse	0.075	0.094	0.148	0.116	0.130
Spouse completed primary school	0.150	0.120	0.141	0.145	0.165
Spouse completed lower secondary	0.068	0.082	0.069	0.100	0.095
Spouse completed upper secondary	0.013	0.034	0.014	0.016	0.022
Spouse completed technical school	0.000	0.000	0.000	0.000	0.000
Spouse completed higher education	0.000	0.000	0.000	0.000	0.000
Head is a leader	0.010 **	0.000	0.000	0.000	0.000
Head is professional	0.015	0.008	0.000	0.012	0.000
Head is a clerk or service worker	0.000	0.021	0.007	0.004	0.005
Head works in agriculture	0.005	0.000	0.004	0.010	0.011
Head is a skilled worker	0.003	0.008	0.018	0.028	0.027
Head is an unskilled worker	0.940	0.903	0.882	0.869	0.892

(Continued)

Table 5 (Continued)

Average Characteristics of the Poor across Methods

Characteristic	Proxy means	Means testing	Local classification	Self-assessment	Wealth ranking
Have a permanent house	0.020	0.025	0.011	0.016	0.016
Have a semi-permanent house	0.403	0.411	0.279	0.394	0.328
Log of area for permanent house	0.071	0.090	0.036	0.056	0.057
Log of area for semi-permanent	1.485 *	1.508	0.993	1.427	1.159
Have electricity connection	0.578 *	0.513 ***	0.632	0.671	0.669
Have running water (taps)	0.013	0.030	0.061	0.050	0.054
Use well water	0.483	0.453	0.461	0.509	0.481
Have flush toilet	0.000 **	0.030	0.054	0.075	0.046
Have a latrine	0.028	0.021	0.025	0.034	0.062
Have a television set	0.138 **	0.186	0.186	0.263	0.220
Have a radio	0.150	0.081	0.089	0.135	0.105
Live in an urban area	0.018	0.131	0.093	0.105	0.094
Live in the North-East Uplands	0.320 ***	0.360 ***	0.118	0.200 *	0.126
Live in the North Central Coast	0.245	0.178	0.207	0.186	0.185
Live in the Central Coast	0.133	0.047 ***	0.121	0.111	0.140
Live in the Central Highlands	0.123	0.174	0.132	0.117	0.132
Live in the Southeast region	0.080 **	0.059 **	0.182	0.200	0.148
Live in the Mekong Delta	0.070	0.085	0.204	0.152	0.180

Note: The average characteristics of the poor according to wealth-ranking exercises were compared to the average characteristics based on each of the other methods. Statistically significant differences at the 10, 5 and 1 percent levels are indicated by one, two and three asterisks respectively.

Table 6

Determinants of Poverty Status across Methods

Characteristic	Proxy means	Means testing	Local classification	Self-assessment	Wealth ranking

Household size	0.0420 ***	-0.0005	0.0011	-0.0138 *	-0.0080
	(7.570)	(-0.070)	(0.140)	(-1.730)	(-0.980)
Share of 60 years and older	0.0250	0.0906	0.1086	0.0839	0.0645
	(0.440)	(1.130)	(1.290)	(1.150)	(0.780)
Share of 15 years and younger	0.4200 ***	0.1131 *	0.1797 ***	0.1841 ***	0.2471 ***
	(8.900)	(1.790)	(2.650)	(2.580)	(3.520)
Share of women	0.1037 *	0.0611	0.1762 **	0.0755	0.0547
	(1.960)	(0.860)	(2.240)	(1.040)	(0.710)
Ethnic minority head	0.2269 ***	0.1242 ***	0.0120	-0.0098	0.0485
	(6.360)	(2.750)	(0.250)	(-0.220)	(1.040)
Male head	-0.0496 *	-0.0239	-0.0109	-0.0188	-0.0223
	(-1.830)	(-0.640)	(-0.270)	(-0.470)	(-0.540)
Head completed primary school	-0.0919 ***	-0.0180	-0.0065	-0.0405	-0.0406
	(-3.730)	(-0.530)	(-0.180)	(-1.110)	(-1.100)
Head completed lower secondary	-0.0909 ***	-0.0849 *	-0.0729	-0.1144 **	-0.1023 **
	(-2.600)	(-1.900)	(-1.550)	(-2.260)	(-2.170)
Head completed upper secondary	-0.0506	-0.0589	-0.0323	-0.1131 *	-0.0715
	(-1.050)	(-1.080)	(-0.590)	(-1.630)	(-1.230)
Head completed technical school	-0.0551	-0.2069 **	-0.1479 **	-0.2127 **	-0.2097 **
	(-1.170)	(-3.150)	(-2.120)	(-2.350)	(-2.190)
Head completed higher education	-0.1800 **	-0.0321	-0.1583 *	-0.1074	-0.1464
	(-2.020)	(-0.190)	(-1.940)	(-0.620)	(-1.500)
No spouse	-0.2344 ***	-0.0215	0.0770	0.0229	0.0455
	(-4.950)	(-0.350)	(1.260)	(0.410)	(0.740)
Spouse completed primary school	-0.0115	-0.0391	-0.0408	-0.0521	0.0238
	(-0.400)	(-1.080)	(-0.970)	(-1.180)	(0.540)
Spouse completed lower secondary	-0.0752 **	-0.0079	-0.0022	0.0229	0.0299
	(-1.990)	(-0.160)	(-0.040)	(0.410)	(0.550)
Spouse completed upper secondary	-0.0482	0.0420	-0.0471	-0.1397 *	-0.0165
	(-1.140)	(0.680)	(-0.900)	(-1.950)	(-0.260)
Spouse completed technical school	0.0563	-0.1644 *	-0.0344	-0.1676	-0.0628
	(1.050)	(-1.720)	(-0.450)	(-1.490)	(-0.700)
Spouse completed higher education	0.3131 **	-0.1021	0.0476	-0.1098	0.0721
	(2.440)	(-0.740)	(0.580)	(-0.620)	(0.730)
Have a permanent house	-0.0342	-0.2216	-0.0880	0.3214	-0.2298
	(-0.180)	(-1.050)	(-0.480)	(1.280)	(-1.060)
Have a semi-permanent house	0.2846 **	0.0073	0.2798	0.6832 ***	0.7163 ***
	(2.220)	(0.050)	(1.420)	(3.670)	(3.710)

(Continued)

Table 6 (Continued)

Determinants of Poverty Status across Methods

Characteristic	Proxy means	Means testing	Local classification	Self-assessment	Wealth ranking
Log of area for permanent house	0.0032	0.0439	-0.0249	-0.1402 **	-0.0135
	(0.070)	(0.920)	(-0.600)	(-2.460)	(-0.280)
Log of area for semi-permanent	-0.1028 ***	-0.0181	-0.1288 **	-0.2270 ***	-0.2501 ***
	(-3.030)	(-0.440)	(-2.540)	(-4.590)	(-4.960)

Have electricity connection	-0.0513 *	-0.1612 ***	-0.0932 **	-0.0571	-0.0461
	(-1.870)	(-3.920)	(-2.250)	(-1.430)	(-1.110)
Have running water (taps)	-0.2132 ***	0.0300	0.0116	0.0152	-0.0331
	(-4.550)	(0.460)	(0.170)	(0.230)	(-0.450)
Use well water	0.0202	-0.0152	-0.0215	0.0466	-0.0254
	(0.830)	(-0.440)	(-0.570)	(1.430)	(-0.710)
Have flush toilet or latrine	-0.1240 ***	-0.1457 ***	-0.0772	-0.1682 ***	-0.1405 ***
	(-3.460)	(-3.600)	(-1.660)	(-3.210)	(-2.790)
Have a latrine	-0.0779 *	-0.0936 ***	-0.0387	-0.1182 **	-0.0009
	(-1.950)	(-2.390)	(-0.900)	(-2.080)	(-0.020)
Have a television set	-0.2894 ***	-0.0828 ***	-0.1770 ***	-0.1817 ***	-0.2042 ***
	(-11.640)	(-2.810)	(-5.350)	(-4.960)	(-5.610)
Have a radio	-0.0312	-0.1192 ***	-0.1409 ***	-0.0755 **	-0.1347 ***
	(-1.390)	(-4.030)	(-4.300)	(-2.050)	(-3.940)
Live in an urban area	-0.1059 ***	0.1837 ***	0.0308	0.0356	-0.0155
	(-3.160)	(4.040)	(0.680)	(0.730)	(-0.310)
Live in the North-East Uplands	0.0875 *	0.0354	-0.1867 ***	0.1684 **	-0.3416 ***
	(1.750)	(0.560)	(-3.330)	(2.480)	(-5.320)
Live in the North Central Coast	0.2763 ***	-0.0223	0.1311 ***	0.2759 ***	-0.0206
	(5.970)	(-0.420)	(2.620)	(4.460)	(-0.350)
Live in the Central Coast	0.1393 ***	-0.2922 ***	0.0422	0.2336 ***	0.0335
	(2.730)	(-4.310)	(0.590)	(3.270)	(0.460)
Live in the Central Highlands	0.1191 **	0.0333	0.2158 ***	0.3847 ***	0.1271
	(2.060)	(0.410)	(2.900)	(5.260)	(1.670)
Live in the Southeast region	-0.1184 ***	-0.2117 ***	0.0642	0.2514 ***	-0.0993 **
	(-3.280)	(-5.000)	(1.510)	(4.970)	(-2.030)
Live in the Mekong Delta	-0.1653 ***	-0.2103 ***	0.0367	0.0738	-0.1149
	(-3.350)	(-3.600)	(0.610)	(1.120)	(-1.730)
R squared	0.719	0.320	0.307	0.384	0.354
F test	146.94	12.89	17.95	39.46	27.81

Note: Results based on Probit regressions with robust standard errors. Values in parentheses are t-statistics. Coefficients significant at the 10, 5 and 1 percent levels are indicated by one, two and three asterisks respectively.

Table 7

Differences in Poverty Determinants across Methods

Characteristic	Proxy means	Means testing	Local classification	Self-assessment
Poor by wealth ranking method	0.0722 ***	0.1884 ***	0.4604 ***	0.3481 ***
	(3.060)	(5.830)	(13.230)	(10.050)
Household size	0.0426 ***	0.0010	0.0048	-0.0110
	(7.680)	(0.150)	(0.710)	(-1.490)
Share of 60 years and older	0.0203	0.0784	0.0789	0.0614
	(0.360)	(1.000)	(1.150)	(0.900)
Share of 15 years and younger	0.4022 ***	0.0666	0.0660	0.0980
	(8.640)	(1.070)	(1.070)	(1.440)

Share of women	0.0997 *	0.0508	0.1510 **	0.0565
	(1.890)	(0.740)	(2.060)	(0.850)
Ethnic minority head	0.2234 ***	0.1150 ***	-0.0103	-0.0267
	(6.290)	(2.570)	(-0.250)	(-0.650)
Male head	-0.0480 *	-0.0197	-0.0006	-0.0111
	(-1.780)	(-0.550)	(-0.020)	(-0.300)
Head completed primary school	-0.0889 ***	-0.0104	0.0122	-0.0263
	(-3.640)	(-0.310)	(0.370)	(-0.770)
Head completed lower secondary	-0.0835 **	-0.0656	-0.0258	-0.0788
	(-2.410)	(-1.490)	(-0.650)	(-1.690)
Head completed upper secondary	-0.0455	-0.0454	0.0006	-0.0882
	(-0.930)	(-0.830)	(0.010)	(-1.370)
Head completed technical school	-0.0399	-0.1673 ***	-0.0513	-0.1397
	(-0.840)	(-2.580)	(-0.890)	(-1.520)
Head completed higher education	-0.1694 **	-0.0045	-0.0909	-0.0564
	(-1.970)	(-0.030)	(-1.400)	(-0.320)
No spouse	-0.2377 ***	-0.0300	0.0561	0.0070
	(-5.040)	(-0.500)	(0.980)	(0.140)
Spouse completed primary school	-0.0133	-0.0436	-0.0518	-0.0604
	(-0.460)	(-1.230)	(-1.450)	(-1.530)
Spouse completed lower secondary	-0.0774 **	-0.0135	-0.0159	0.0124
	(-2.050)	(-0.280)	(-0.380)	(0.240)
Spouse completed upper secondary	-0.0471	0.0451	-0.0395	-0.1340 **
	(-1.100)	(0.740)	(-0.850)	(-2.060)
Spouse completed technical school	0.0608	-0.1525 *	-0.0054	-0.1457
	(1.180)	(-1.700)	(-0.100)	(-1.460)
Spouse completed higher education	0.3079 **	-0.1157	0.0144	-0.1349
	(2.440)	(-0.850)	(0.220)	(-0.780)
Have a permanent house	-0.0176	-0.1783	0.0178	0.4014
	(-0.090)	(-0.900)	(0.130)	(1.640)
Have a semi-permanent house	0.2329 *	-0.1277	-0.0500	0.4338 ***
	(1.820)	(-0.810)	(-0.330)	(2.570)

(Continued)

Table 7 (Continued)

Differences in Poverty Determinants across Methods

Characteristic	Proxy means	Means testing	Local classification	Self-assessment
Log of area for permanent house	0.0042	0.0464	-0.0187	-0.1355 **
	(0.090)	(1.050)	(-0.610)	(-2.440)
Log of area for semi-permanent	-0.0847 **	0.0290	-0.0137	-0.1399 ***
	(-2.490)	(0.710)	(-0.350)	(-3.090)
Have electricity connection	-0.0480 *	-0.1525 ***	-0.0720 **	-0.0410
	(-1.750)	(-3.790)	(-2.010)	(-1.100)
Have running water (taps)	-0.2108 ***	0.0362	0.0268	0.0267
	(-4.450)	(0.610)	(0.490)	(0.480)
Use well water	0.0221	-0.0105	-0.0099	0.0554
	(0.920)	(-0.310)	(-0.300)	(1.810)
Have flush toilet	-0.1138 ***	-0.1192 ***	-0.0125	-0.1193 **
	(-3.180)	(-3.020)	(-0.320)	(-2.420)

Have a latrine	-0.0778 ** (-1.960)	-0.0934 ** (-2.420)	-0.0382 (-1.020)	-0.1179 ** (-2.280)
Have a television set	-0.2747 *** (-10.750)	-0.0443 (-1.500)	-0.0830 *** (-2.790)	-0.1106 *** (-3.200)
Have a radio	-0.0215 (-0.940)	-0.0939 *** (-3.120)	-0.0789 *** (-2.610)	-0.0286 (-0.820)
Live in an urban area	-0.1048 *** (-3.150)	0.1866 *** (4.290)	0.0379 (0.960)	0.0410 (0.910)
Live in the North-East Uplands	0.1121 *** (2.230)	0.0997 (1.600)	-0.0295 (-0.560)	0.2873 *** (4.360)
Live in the North Central Coast	0.2778 *** (6.050)	-0.0184 (-0.360)	0.1406 *** (3.090)	0.2830 *** (4.920)
Live in the Central Coast	0.1369 *** (2.680)	-0.2985 *** (-4.520)	0.0268 (0.420)	0.2219 *** (3.470)
Live in the Central Highlands	0.1099 * (1.920)	0.0094 (0.120)	0.1573 (2.270)	0.3405 *** (4.930)
Live in the Southeast region	-0.1112 *** (-3.100)	-0.1930 *** (-4.650)	0.1098 *** (2.960)	0.2859 *** (6.040)
Live in the Mekong Delta	-0.1570 *** (-3.180)	-0.1886 *** (-3.310)	0.0896 (1.700)	0.1138 * (1.850)
R squared	0.723	0.349	0.463	0.459
F test	144.68	15.71	28.02	55.95

Note: Results based on Probit regressions with robust standard errors. Values in parentheses are t-statistics. Coefficients significant at the 10, 5 and 1 percent levels are indicated by one, two and three asterisks respectively.